OWNER'S MANUAL

Antares 44i



Contents

INTRODUCTION ii

This manual has been compiled to help you operate your craft with safety and pleasure. It contains details of the craft; the equipment supplied or fitted, its systems and information on its operation and maintenance. Please read it and the several equipment manufacturers' manuals carefully and familiarize yourself with the craft before using it.

The owner's manual is not a course on boating safety or seamanship. If this is your first craft, or if you are changing to a type of craft you are not familiar with, for your own comfort and safety, please ensure that you obtain handling and operating experience before "assuming command" of the craft.

Ensure that the anticipated wind and sea conditions will correspond to the design category of your craft, and that you and your crew are able to handle the craft in these conditions.

Even when your boat is categorized for them, the sea and wind conditions corresponding to the design categories A, B, and C range from severe storm conditions for the top of category C, open to the hazards of a freak wave or gust. These are therefore dangerous conditions, where only a competent, fit and trained crew using a well maintained craft can satisfactorily operate.

Always use trained and competent people for maintenance, fixing or modifications. Modifications that may affect the safety characteristics of the craft shall be assessed, executed and documented by competent people. The boat builder cannot be held responsible for modifications that he has not approved.

In some countries, a driving licence or authorization is required, or specific regulations are in force.

Always maintain your craft properly and make allowance for the deterioration that will occur in time and as a result of heavy use or misuse of the craft.

Any craft, no matter how strong it may be, can be severely damaged if not used properly. This is not compatible with safe boating. Always adjust the speed and direction of the craft to sea conditions.

If your craft is fitted with a life raft, carefully read its operation manual. The craft should have onboard the appropriate safety equipment (lifejackets, harness, etc.). This equipment is mandatory in some countries. The crew should be familiar with the use of all safety equipment and emergency manoeuvring (man overboard recovery, towing, etc.). Sailing schools and clubs regularly organize drill sessions.

PLEASE KEEP THIS MANUAL IN A SECURE PLACE, AND HAND IT OVER TO THE NEW OWNER WHEN YOU SELL THE CRAFT.

MANUFACTURER

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DISCLAIMER

Although Antares Yachts, LLP has prepared this manual carefully, the company makes no warranty or representation, either express or implied, with respect to the accuracy of the contents of this manual. In no event will the company be liable for direct, indirect, special or consequential damages resulting from any defects or inaccuracy in this manual. No employee or agent of the company is authorized to make any modifications or additions to this policy.

GENERAL 1

General Description 1-1

NORTH AMERICAN MODEL
The Antares 44i, NA version, complies with the requirements of the Canadian and US Coast Guards, and with the relevant recommendations of the ABYC and NMA, current at the time of delivery.

CE MODEL
The Antares 44i is CE Certified and meets all the requirements of the Recreational Craft Directive 94/25/EC.

CATEGORY A – "OCEAN"
The craft is designed for extended voyages where conditions experienced may exceed wind force 8 (Beaufort Scale) and include significant wave heights of 4 m (see ***Note 1*** below), for vessels that are largely self-sufficient. Abnormal conditions such as hurricanes are excluded.

DIRECTIVE 94/25/EC
Governs the certification of the following systems on the craft:

- Electric Bilge Pumps
- Navigation Lights
- Radar systems and communication systems
- Windows, hatches, doors, portlights and deadlights.

This certification was issued by:

International Marine Certification Institute
Rue Abbe Cuypers 3
B-1040 BRUSSELS, BELGIUM
Tel: +33-2-741-6836
Fax: +32-2-741-2418

WORKING DECK – CE MODEL
The working deck consists of the horizontal surfaces within the handrails and stanchions, where non-skid surfaces are provided. Be aware that a slip hazard exists on smooth areas outside these zones.

Note 1: *The significant wave height is the mean height of the highest one-third of the waves, which approximately corresponds to the wave height estimated by an experienced observer. Some waves will be double this height.*

Your Warranty 1-2

> **NOTE:** The warranties for equipment may include registration and service activities to maintain eligibility. The various manufacturers' manuals provided in the Owner's Kit should be reviewed for these requirements, as part of the familiarization process.

The Manufacturer shall be responsible for the reasonable repair or replacement of deficiencies resulting from defects in workmanship for material for which the Manufacturer is responsible for a period of one (1) year from date of delivery.

With respect to components or equipment of other manufacturers or suppliers installed on the yachts, the Manufacturer shall assign the available manufacturers or suppliers warranties, the Manufacturer will cooperate with and assist the Purchaser with respect to any such warranty claims, but otherwise the Manufacturer gives no other warranty or representation as to such components or equipment. The Purchaser must comply with the requirements of such manufacturers or suppliers as contained in their warranty policy and the Manufacturer assumes no responsibility for such conditions or compliance therewith.

The Manufacturer's warranty is limited to reasonable repair or replacement of defective parts and will only be carried out at the place of manufacture or such other places within continental North America as the Manufacturer may specify. The Manufacturer is not responsible for transportation to the place of repair. The warranty applies only so long as the yacht is used solely for private recreational use and does not apply to any yacht which has been put to any charter or other commercial use and also does not apply to any damage caused by accident, misuse, act of God, collision or storm, or directly or indirectly resulting from modifications, improvements or additions made by the Purchaser. The only Manufacturer's warranties are those set out herein and the parties hereby waive any other warranties including, without limitation, any warranties implied or assumed by the custom of the trade or by the law of any jurisdiction. Notwithstanding the terms contained herein:

a) The Manufacturer will not be held responsible for damage incurred due to chartering the boat or negligence on the part of the owner, charterer or charter management service, nor for any cosmetic damage as a result of heavy traffic or abuse by charterers.

b) The Manufacturer agrees to be responsible for the repair or replacement of major construction defects in the hull and deck for a period of five (5) years from the date of delivery, provided no unauthorized structural changes have been made by the owner or other third parties. The Warranty below the waterline against osmotic blistering is for five (5) years when Interprotect 2000 epoxy undercoating is specified, this provides a sliding scale of coverage as follows;

Year 1: 100% of cost to repair the affected area.
Year 2: 90% of cost to repair the affected area.
Year 3: 80% of cost to repair the affected area.
Year 4: 70% of cost to repair the affected area.
Year 5: 60% of cost to repair the affected area.

This sliding scale does not apply to areas above the waterline, any standard graphics or optional metallic graphics.

Weights and Measures 1-3

Measurements		CE Metric	NA Imperial
	Length over all (LOA)	13.4 m	44' 0"
	Length Waterline	13.3 m	43'6"
	Beam over all (BOA)	6.6 m	21'9"
	Hull Centreline Beam	4.9 m	16'
	Draft	1.22 m	4'0"
	Max Suggested Load (section 2-1)	3,124 kg	6,900 lbs
	Light Craft Condition *Note 1	7,722 kg	17,000 lbs
	Loaded Displacement *Note 1	10,846 kg	23,900 lbs
	Minimum Operating Condition *Note 1	8,163 kg	18,000 lbs
	Height over mast (excluding antenna)	18.6 m	61'0"
	Height over mast lowered, on deck	3.9 m	12'9"
Sail Area	Main	57 sq. m.	616 sq. ft.
	Main - Furling	41 sq. m.	440 sq. ft.
	Jib	23 sq. m.	243 sq. ft.
	Genoa	44 sq. m.	472 sq. ft.
	Screecher	59 sq. m.	635 sq. ft.
Capacities	Diesel Fuel *Note 2	2 x 227.5 litres	2 x 60 US gallons
	Fresh Water *Note 3	2 x 284 litres	2 x 75 US gallons
	Holding tanks	2 x 113 litres	2 x 30 US gallons
Auxiliary Propulsion		2 x 22 kW 2 x 30 kW (optional)	2 x 29 hp 2 x 40 hp (optional)
Gas Cylinders		-	2 x 20 lbs
Electrical	AC	1 x 230 volt 50hZ	2 x 30 amp circuits @ 115 v. 1-phase 60 cycles
	DC Service Batteries	12 volt, 740 amp hours	12 volt, 740 amp hours
	Starting Batteries	3 x Group 24, 12 v.	3 x Group 24, 12 v.

*Note 1: Refer to worksheet ISO 12217-2 in Appendix for breakdown of calculations.

*Note 2: All of the fuel tanks' capacity may not be useable according to trim and loading, and a 20% reserve should be kept.

*Note 3: All of the water tanks' capacity may not be usable according to trim and loading.

SAFETY 2

Safe Loading Conditions 2-1

Maximum Recommended Load (ISO 14946)

1. The Antares 44i is designed to carry a load of people, their food, baggage of maximum 3,124 Kg (6,880 lbs), evenly distributed through the vessel.

2. The maximum recommended load includes the weight of all persons on board, all provisions and personal effects, miscellaneous equipment and all consumable liquids. The total weight of liquids when all permanently installed tanks are full is 1,134 kg.

> **WARNING:** When loading the craft, never exceed the maximum recommended load. Always load the craft carefully and distribute loads approximately to maintain design trim. Avoid placing heavy weights high up.

3. The theoretical maximum recommended number of adult persons and/or combination of adults/children, determined in accordance with ISO 14946 and ISO 12217 is six (6).

> **WARNING:** Do not exceed the maximum number of persons. Regardless of the number on board, the total weight of persons and equipment must never exceed the maximum recommended load.

Stability and Buoyancy 2-2

Stability may be compromised due to the following conditions:

a) any change in the disposition of the masses aboard may significantly affect the stability, trim and performance of the craft;

b) bilge water should be kept to a minimum;

c) stability is reduced by any weight added high up;

d) in rough weather, hatches, lockers and doorways should be closed to minimize the risk of flooding;

e) stability may be reduced when towing or lifting heavy weights using a davit or boom;

f) breaking waves are a serious stability hazard.

Stability Data

The stability data as calculated in accordance to ISO 12217-2 standards is as follows:#

Minimum operating mass: 8,163 kg = 8.16 tonnes
Loaded displacement mass: 10,846 kg = 10.85 tonnes

Sails set	Maximum Beaufort* force advised for each sail combination	
	Minimum operating condition	Loaded displacement condition
Main sail + working genoa	Force 5 (19 K wind)	Force 5 (20 K wind)
Main sail + working jib	Force 5 (20 K wind)	Force 5 (21 K wind)
First reef in main sail + jib	Force 6 (23 K wind)	Force 6 (24 K wind)
Second reef in main sail + jib	Force 6 (26 K wind)	Force 7 (28 K wind)
Jib	Force 8 (37 K wind)	Force 8 (40 K wind)

NOTE 1 **If excessive sail is carried**, THIS BOAT MAY CAPSIZE, but is designed not to sink if this occurs.

NOTE 2 The wind strengths tabulated above include a margin for the effect of gusts. **In violent winds or confused or breaking seas**, additional caution should be exercised.

NOTE 3 **In the event of a severe gust,** FREE SHEETS
If wind is closehauled, LUFF UP
If wind is abeam, FREE SHEETS
If wind is abaft the beam, BEAR AWAY

NOTE 4 **Special care** should be taken when turning from a following wind onto a beam reach, because both the apparent wind speed and heeling effect will increase. Such turns should not be made rapidly, and consideration should be given to a reduction in sail before such a manoeuvre.

*Refer to Beaufort Wind Scale on following page

Beaufort Wind Scale

Force	Windspeed Knots	Description	Sea Condition
0	0	Calm	Sea like a mirror
1	1 - 3	Light Air	Ripples but without foam crests
2	4 - 6	Light Breeze	Small wavelets. Crests do not break
3	7 - 10	Gentle Breeze	Large wavelets. Perhaps scattered white horses
4	11 - 16	Moderate Breeze	Small waves. Fairly frequent white horses.
5	17 - 21	Fresh Breeze	Moderate waves, many white horses
6	22 - 27	Strong Breeze	Large waves begin to form; white foam crests, probably spray
7	28 - 33	Near Gale	Sea heaps up and white foam blown in streaks along the direction of the wind
8	34 - 40	Gale	Moderately high waves, crests begin to break into spindrift
9	41 - 47	Strong Gale	High waves. Dense foam along the direction of the wind. Crests of waves begin to roll over. Spray may affect visibility
10	48 - 55	Storm	Very high waves with long overhanging crests. The surface of the sea takes a white appearance. The tumbling of the sea becomes heavy and shock like. Visibility affected
11	56 - 63	Violent Storm	Exceptionally high waves. The sea is completely covered with long white patches of foam lying in the direction of the wind. Visibility affected
12	64+	Hurricane	The air is filled with foam and spray. Sea completely white with driving spray. Visibility affected

For further information, please refer to Antares 44 Calculations Mast Load Diagram (CA-04-04) and Antares 44 Calculations Hydrostatic Curves (CA-04-05) in the Appendix.

Your Responsibilities 2-3

Marine law requires that the owner must keep the vessel in a seaworthy condition, properly equipped and properly manned, and must only allow the vessel to be operated by competent persons with the requisite skill.

Courses in navigation and seamanship are offered by several organizations. These courses lay a firm foundation of knowledge in:

- Seamanship and boat handling, basic to advanced
- Regulations for prevention of collision, international and inland
- Navigation – basic to advanced
- Radio communication
- Safety at sea
- First aid
- Dealing with serious storms
- Distress communication
- Weather prediction
- Pollution control
- Respect for others on the water

The Red Cross, St John's Ambulance Corps and others offer courses in first aid and cardio-pulmonary resuscitation (CPR).

Statutory Requirements 2-4

Depending on where you document or register your boat and where it is operated, you and the boat will be the subject to a number of legal requirements. These requirements include, but are not limited to:

- Complete and current documentation or registration certificates
- Required safety equipment, in good condition. (See section 2-6)
- Knowledge of the operating and licensing requirements for VHF radios in the jurisdictions of use
- Charts for the boat's operating area
- Knowledge of federal, state or provincial and local regulations respecting
    - safety
    - discharge of wastes (gray water or sewage)
    - speed and wake
    - noise
    - fuel and oil spillage
    - paint/cleaning agents and other substances.
- Knowledge of accident reporting requirements (see USCG Boating Accident Report in appendix).
- Understanding of the obligation to render assistance to persons in distress where the owner or operator of the vessel is required by law to render assistance to any individual or vessel in distress, as long as your vessel is not endangered in the process.

Navigation Lights 2-5

Your Antares 44i is equipped with navigation lights as required by international law;

Type	**Use**
Steaming lights, near masthead, white, 225 degrees facing forward	Use only when under power
Stern light, white	Use under sail and power
Anchor, masthead, all-around white	Use at anchor only
Tricolour, masthead	Use under sail only, as an alternative to side and stern lights, which must be off when tricolour is on
Steaming light, side lights and stern light	Under power
Sidelights and stern light. OR , tricolour, but not both	Under sail
Masthead white. (A mast deck light; flood white, is also provided)	At anchor

This conforms to the international regulations for a sailing boat under 20 meters (65' 7½") at the time of delivery. However, please note the following points:

- you are responsible for ensuring that the vessel complies with regulations currently in force;
- if you cruise outside your home waters, you may encounter different requirements. You are responsible for meeting those requirements;
- this information is accurate at the time of publication of this manual, but please note that the owner must accept responsibility for meeting legal requirements.

Safety Equipment 2-6

You are responsible for providing and maintaining safety equipment appropriate for the jurisdictions in which you are cruising. You are responsible for identifying and meeting those requirements.

Generally, the requirements will include at least the following equipment:

- fire extinguishers of appropriate type & size, fully charged (see also Sec 2 – 7);
- life jackets;
- life rings;
- life raft;
- visual distress signals: pyrotechnical devices for day or night use;
- sound signalling device.

Fire Protection 2 – 7

General

Fire Protection Equipment is not included in the equipment of the Antares 44i at the factory. Equipment and location requirements vary between jurisdictions, and change over time. The owner/operator is responsible for satisfying these requirements.

Portable Fire Extinguishers and Fire Blanket

The boat, when in service, should be equipped with portable fire extinguishers and a fire blanket. See Below Deck Service Locations (GA-04-05) for suggested placement.

> **CAUTION:** excessive use of CO_2 or halon like substances, in small spaces and mid-ship in each hull, can result in asphyxiation.

Servicing of Fire-fighting Equipment

The boat owner/operator shall

- have fire-fighting equipment checked at the intervals indicated on the equipment, and;
- replace portable fire extinguishers, if expired or discharged, by devices of identical fire-fighting capacity.

Responsibility of Boat Owner/Operator

It is the responsibility to the boat owner/operator

a) to ensure that fire-fighting equipment is readily accessible when the boat is occupied, and
b) to inform members of the crew about
    - the location and operation of fire-fighting equipment,
    - the location or discharge openings into the engine space, and
    - the location of routes and exits.

CAUTION:

- Keep the bilges clean and check for fuel and gas vapours or leaks frequently.
- When replacing parts of the fire-fighting installation, only matching components shall be used, bearing the same designation or having equivalent technical and fire-resistant capabilities.
- Do not fit free-hanging curtains or other fabrics in the vicinity of, or above, cookers or other open-flame devices.
- Do not stow combustible material in the engine space. If non-combustible materials are stowed in the engine space, they shall be secured against falling into machinery and shall cause no obstruction to access into or from the space.
- Exits other than the main companionway doors are identified by a symbol. See Accommodation Escape Routes diagram (GA-04-09).

NEVER:

- Obstruct passageways to exits and hatches,
- Obstruct safety controls (fuel valves, gas valves, switches or the electrical system),
- Obstruct portable fire extinguishers stowed in lockers,
- Leave the craft unattended when cooking and/or heating appliances are in use,
- Modify any of the craft's systems (especially electrical, fuel and gas) or allow unqualified personnel to modify any of the craft's systems,
- Fill any fuel tank or replace gas bottles when machinery is running, or when cooking or heating appliances are in use,
- Smoke while handling fuel or gas.

Means of Fire Escape

The position of hatches, doors and other openings intended to be a means of escape from the interior in case of fire are illustrated in the Accommodation Escape Routes diagram (GA-04-09).

Man-overboard prevention and recovery 2-8

The Deck Service Locations diagram (GA-04-04) indicates the working deck area and the man overboard recovery zone located at the transoms.

PROPULSION ENGINES AND GENERATOR 3

Engines 3-1

Auxiliary power is provided by two diesel engines, located amidships under the floors, with direct shaft drive to folding propellers. Please read the manufacturer's manuals before running the engines and prior to carrying out any maintenance.

The diesel engines have a closed circuit cooling system. Sea water cools the internal tubes of a heat exchanger, inside which is the liquid that actually cools the engine. Sea water never comes in direct contact with the engine. For the system to work properly, sea water must flow to the heat exchanger, and engine coolant must circulate through the engine.

- While running, make sure that the exhaust flow includes a continuous flow of sea water. Monitor the engine temperature gauges, shut down an overheating engine immediately;
- Check the coolant level periodically and replace it annually with a product recommended by the engine manufacturer. Also, check the cooling water seacocks. They should operate freely and be free of fouling.
- Check oil levels in the gear cases and the engine sump.

Make sure that the engine oil level dip-stick is inserted correctly, as described in the engine manual, to ensure an accurate reading.

> **NOTE:** Incorrect operation or failure to perform required maintenance might jeopardize the manufacturer's warranty.
>
> **CAUTION:** The switches that shut off the buzzers warning of overheating or low oil pressure should be kept in the 'set' position. Whether you do the work yourself, or have it done (by a qualified mechanic), follow the maintenance recommendations in the manual. Pay particular attention to break-in requirements, especially the service required by new engines.
>
> **WARNING:** Avoid contact with moving machinery.

Vibrations in the propulsion system may indicate problems of engine and shaft alignment, bent propeller shaft, damaged propeller, or fouling, and should be investigated at the first opportunity. If heavy vibration is experienced, minimize use of engine until rectified to avoid equipment damage.

Please refer to Mechanical Propulsion Diagnostic Chart (ME-04-16) for further information on troubleshooting. Refer to Shaft Line Components (ME-04-10) for description of components.

Generator 3-2

The generator is located in the starboard forepeak. It is self-contained and charges its own starting battery. Should the generator alternator fail, the auxiliary charge on the charger/inverter will charge the battery. See Inverter/Charger diagram (EL-04-19) for description of its functions.

Sea water for cooling is provided by a pump located under the floor in the starboard engine area.

Details for operation and maintenance are in the manufacturer's manual. Note also the registration form and dealer checks required to maintain warranty eligibility. See the Generator Set Diagram (EL-04-20) for a further description on operating the generator.

Fuel Systems 3-3

Two 60-gallon (227.5 litre) diesel fuel tanks are located under the floorboards in each hull, with fuel filters and shut off valves. The fillers are located on deck above the tanks. See Deck Service Locations diagram (GA-04-04) for location.

Fuel Filters

A fuel filter/water separator is provided beside each engine. Check frequently for water at the bottom of the bowls. When present, with the engine OFF, drain the water from the bowl. Filter element change is recommended at 250 hours, or every second oil change – more often if dirty fuel has been encountered.

SHIP'S SYSTEMS 4

Steering 4-1

The two rudders are protected by skegs, and are connected by a crossbar. The wheel is connected to the rudders by a shaft drive.

The Jefa gearboxes are permanently lubricated and do not require any regular service. You may wish to lubricate the rod ends periodically with Teflon-based gel lubricant. All fasteners, locknuts, gear boxes and rod ends may be checked for security.

Emergency Tiller

An emergency tiller is provided in case of steering failure. It can be used with either rudder by removing the deck plate located on the centerline of the hull at the very aft end of the deck. We recommend that you try fitting and using this tiller while under sail and under power at the earliest opportunity. See Deck Service Locations diagram (GA-04-04) for location.

Electrical Systems – General 4-2

The system has been designed and configured to be self–tending and failsafe to the extent possible, thereby ensuring the best likelihood of engine starting capability. Modifying the system is not recommended and any changes or additions contemplated should be undertaken with the full comprehension and in concert with the original design parameters.

Original wire is tin-platted copper as required by regulation. Repairs or additions should be made using like materials and methods. Wires are secured against chafe at regular intervals and in specific points as required.

Loose connections may cause intermittent operation and may generate heat or encourage corrosion. Check connections periodically for security, especially batteries and heavy bus bar terminals. Usual precautions must be observed at all time when working on electrical gear which may result in a shock and /or burn hazard.

AC Electrical System 4-3

The electrical system may be configured to North American or European/mixed use configurations. Please refer to the Electrical One Line diagram (EL–04-04) and supporting Electrical Power Flow diagrams (EL-04-14) for detailed description of the AC electrical system.

Note:

- Do not modify the craft's electrical systems or relevant drawings. Installation, alterations and maintenance should be performed by a competent marine electrical technician. Inspect the system at least biennially.
- Disconnect shore-power connections when the system is not in use.

- Connect metallic housings or enclosures of installed electrical appliances to the protective conductor system in the craft (green or green with a yellow stripe conductor).
- Use double insulated or grounded (earthed) electrical appliances.
- If the reverse polarity indicator is activated, do not use the electrical system. Correct the polarity fault before activating the electrical system on the craft.

WARNING: Do not work on an energized AC system.

WARNING: To minimize shock and fire hazards:

- turn off craft's shore-power connection switch before connecting or disconnecting shore-power cable;
- connect shore-power cable to craft's inlet before connecting to shore-power source;
- disconnect shore-power cable at shore-power source first;
- if reverse polarity indicator is activated, disconnect cable immediately;
- close shore-power inlet cover tightly when not in use;
- do not alter shore-power cable connectors, use only compatible connectors.

DC Electrical System 4-4

Please refer to the Electrical One Line diagram (EL–04-04), the Electrical Power Flow diagrams (EL-04-14), and the 12Volt Supply Distribution diagram (EL-04-03) for detailed description of the DC electrical system.

The 12-volt DC system is controlled by circuit breakers on the main electrical panel. The two engine start batteries are located in their respective engine compartments with local switches under the steps in each hull. The generator set has a dedicated start battery located in the forward starboard locker. The ship's service batteries are four 6-volt deep-cycle batteries connected in series/parallel, located in the forward mast base locker with a switch under the navigation table in the saloon.

WARNING - NEVER:

- work on the electrical installation while the system is energized;
- modify the craft's electrical system or relevant drawings: installation, alterations and maintenance should be performed by a competent marine electrical technician;
- alter or modify the rated current amperage or overcurrent protective devices;
- install or replace electrical appliances or devices with components exceeding the rated current amperage of the circuit;
- leave the craft unattended with electrical system energized, except automatic bilge-pump, fire protection and alarm circuits.

WARNING: Safety precautions should be observed when working around batteries because of the presence of acid and hydrogen

Voltage and current meters are provided, with a selector switch, which can be used to monitor the condition of the batteries, especially when troubleshooting. Generally, a fully charged battery will indicate approximately 12.8 volts with no loads connected. While charging, the voltage will be in the range of 13.8 to 14.2 volts.

> **CAUTION:** When servicing the engine start batteries, the local switches should be turned "OFF". The Charge Combiner should also be turned "OFF" at the Charge Combiner to ensure that no power is present at the switch terminals. See Electrical Charge Combiner diagram (EL-04-18) for description of Charge Combiner functions.

Periodically, check the batteries' electrolyte and top it up with water. Use distilled water; tap water may contain minerals that shorten a battery's life.

Electronics 4-5

The electronic equipment should be operated as described in the manufacturer's documentation.

The flux gate magnetic equipment for the autopilot is located in the cockpit lazarette. Make sure that no steel or magnetic steel objects come close to it.

Bilge Pumps 4-6

Two power operated permanent bilge pumping systems are installed to run on the 12V electrical supply. The submersible bilge pumps with integral automatic float switches are installed in the sump wells provided in each keel cap moulding. The pumps are piped overboard with anti-siphon loops and seacocks to discharge above the waterline. The pumps' capacity is 1500 GPH.

Each pump is controlled by an automatic float switch, which is energized by a breaker on the main panel and by the switch at the helm. The switches are normally set to "Auto", but the switch can be by-passed by setting it to "Manual."

An auxiliary portable, manual bilge pump is provided. It can be deployed as required by circumstance.

> **WARNING:** The bilge pumping system is not designed for damage control.

> **SAFETY PRECAUTION:** Check the function of all bilge pumps at regular intervals. Clear pump inlets from debris.

Propane & LPG Systems 4-7

This section is applicable to any liquefied petroleum gas. The gas tanks are located in the stern lockers. The active tank is on the port side and is provided with a manual valve and an electrically-operated solenoid valve.

In order to use any propane appliance, the manual valve at the tank must be fully open, and the breaker at the main electrical panel must be "ON" to energize the solenoid valve. The LPG switch must also be "ON." The solenoid draws electrical power when "ON". To conserve battery power, the panel breaker should be "OFF" when no propane appliances are in use. Be sure that appliance valves are closed before opening the cylinder valve.

Close fuel supply-line valves and cylinder valves when appliances are not in use. Be sure that appliance valves are closed before opening the cylinder valve.

CAUTION: Close valves before refuelling, and immediately in an emergency.

It is suggested that you test the LPG system for leakage regularly. Connections can be checked for leakage by:

- Observation of the pressure gauge for pressure drop with the appliance valves closed and the cylinder valve opened then closed;
- Manual leak testing, or
- Testing with soapy water or detergent solution (with appliance burner valves closed and cylinder and system valves open).

If leakage is present, close the cylinder valve and have the system repaired by a qualified person.

CAUTION: Do not use solutions containing ammonia.

WARNING: **NEVER USE FLAME TO CHECK FOR LEAKS.**

WARNING: Fuel-burning open-flame appliances consume cabin oxygen and release products of combustion into the craft. Ventilation is required when appliances are in use. Open designated vent openings while appliances are in use. Do not use the stove or oven for space heating. Never obstruct ventilation openings.

Observe the following precautions:

- do not obstruct access to propane system components in any way;
- do keep valves on empty cylinders closed and disconnected. Keep protective covers, caps or plugs in place. Store reserve cylinders in the lockers which are vented overboard and intended for that purpose;
- do not use propane cylinder housings or cylinder lockers for storage of any other equipment.

WARNING: Never leave craft unattended when LPG consuming appliances are in use.

WARNING: do not smoke or use open flame when replacing propane cylinders.

Galley Stove 4-8

Read the manuals with the stove before you use it and observe all the cautions therein described.

> **DANGER**: A propane build-up in the boat can be extremely dangerous, so ensure that burners are correctly lit.
>
> **WARNING**: do not leave the stove unattended. Check connections regularly to ensure they are tight.
>
> **WARNING**: Fuel-burning open-flame appliances consume cabin oxygen and release products of combustion into the craft. Ventilation is required when appliances are in use. Open designated vent openings while appliances are in use. Do not use the stove or oven for space heating. Never obstruct ventilation openings.

Microwave Oven 4-9

Please see manufacture's manual for operation and maintenance procedures.

Like all heating devices, the microwave oven puts a heavy load on the electrical system. Use with care if the microwave is powered by an outlet that may be optionally supplied by an inverter as it may draw power from the batteries through the inverter.

Seacocks 4-10

The number and exact location of the seacocks on each Antares 44i depends on the particular combination of equipment fitted. The owner is advised to identify the location and record them. The locations are shown on Below Deck Service Locations diagram (GA-04-05).

We recommend that you close seacocks any time you leave the boat for an extended period. These valves should be activated on a regular schedule. The handle should be moved throughout the open/close path every thirty days. Leaving a valve open or closed without moving the handle can cause freeze-up. The manufacturer recommends a twice yearly lubrication maintenance as described below:

To lubricate seacocks while the boat is in the water you must:

1. Close valve.
2. Remove hose from tailpipe.
3. Remove remaining water from valve/tailpipe.
4. Swab waterproof grease (water pump grease, winch grease) or LanoCote™, generously, on ball.
5. Reattach hose, checking for fatigue and rusted hose clamps.
6. Activate valve a few times.
7. When boat is hauled, you can perform steps 4-6 from outside the hull to lubricate opposite side of ball and seals.

Fresh Water Systems 4-11

Two fresh water tanks are provided one in each forward compartment under the floor. Both are filled from the anchor locker. The fresh water pump is located under the floor amidships in the starboard hull with the tank selector valves. Please see Fresh Water Piping Diagram (ME-04-13) for more information.

Hot and cold fresh water is supplied under pressure in the galley, the heads, and the transom shower. Both hot and cold systems are pressurized by the pump, which starts automatically when any tap is opened providing that the appropriate circuit breaker is "ON" at the main electrical distribution panel.

Water is drained from the shower by a diaphragm pump, activated by a switch in the shower and by the breaker at the main panel. Please note that the sump strainer must be cleaned periodically. Please see Mechanical Systems Piping Plan (ME-04-03) for details.

Water Heater 4-12

Two water heaters are provided and are located in the engine compartments. Each 6 gallon (22 litre) tank is heated by the engine cooling system or by AC electrical power.

Watermaker 4-13

The watermaker is installed in the starboard aft transom locker. It is usually wired through the 120 Volt AC system due to the high power draw. Valves are provided for delivery of water to either of the water tanks individually. See the Fresh Water Piping Diagram (ME-04-13) for more information. Configuration may vary slightly depending on the model used.

The watermaker is not part of the water pressure system and is purely a water delivery system.

Watermakers require regular maintenance. Please refer to the manufacturer's manual for procedures specific to the brand.

Head 4-14

Two electric heads are powered by 12v DC. The main panel breakers must be switched "ON" when in use. Clean toilet with mild nonabrasive cleaners without strong aromatics. Cleaners having high concentrations of aromatics such as pine scented concentrated cleaners and strongly scented degreaser concentrates can cause the pump's seal to swell and may contribute to a premature seal leak. Refer to the manufacturer's instructions for advice on operation, maintenance, spare parts and deodorant recommendations.

Holding Tank 4-15

The holding tanks are located in the forward lockers and may be emptied to shore via vacuum fitting on deck or discharged overboard by gravity through a seacock located below the waterline. The discharge seacock is normally closed when in environmentally protected waters and may be required to be secured in a closed position. Before emptying the holding tank overboard, check local regulations for discharge of waste.

Refrigeration 4-16

The refrigerator and freezer are separate units that use identical compressor units and are located in the cockpit locker. The units are air cooled. Power is 12-volt DC, with breakers on the main panel.

Air Conditioning 4-17

Three air conditioning units are provided. Two are located under the aft cabin bunks and one larger unit is located under the saloon seat to cool the main area and the port forward cabin. All operate on AC power. The units are water-cooled, with seacocks, pumps and strainers located under the aft cabin floors and in the port engine compartment.

Check the raw water strainers periodically to ensure they are clear of debris. Periodically clean the air grilles on the units.

The air conditioning units act as dehumidifiers, removing moisture from the air which accumulates in their drip pans. The aft AC unit's drip pans drain their clear water to the respective bilge pump sumps just forward of the engines where sufficient accumulations will trigger the bilge pumps to discharge overboard. The saloon AC discharges directly through a scupper in the bridgedeck.

Windlass 4-18

The windlass operates on 12-volt DC power and is protected by a breaker at the main panel and by a fuse located by the windlass motor located in the mast base locker.

Anchor Package 4-19

A basic package is offered which is found effective in most conditions. Owners usually add to this according to their experience and intended cruising conditions. For components of the anchoring bridle assembly see the Anchor Bridle Assembly diagram (DH-05-46) and Anchor Bridle Instruction (SP-04-07).

Davits 4-20

The davits are designed for a static load of 250 lbs, equally distributed. The davits are not intended to support heavy loads of fuel cans, gear, crewmembers, etc.

Although the davits are able to support greater loads in static conditions, it is essential to appreciate that in sea conditions, the motions of the vessel will create G-Loads potentially far in excess of the simple weight of the dinghy. When elevated, the dinghy must be secured against swaying by lashing it securely to avoid cyclical loads.

Rigging and Sails 4-21

The vessel is rigged as a fractional sloop with double diamond stays on the anodized aluminum mast. The standing rigging is 1 x 19 stainless steel with swaged terminals and open turnbuckles.

Rigging Set-up

The diamond stays are adjusted at the factory. However, they will stretch with use, and should be fine-tuned while sailing to keep the mast straight. The shrouds should be set up according to Selden's instruction as described in the Selden manual in the Owner's kit.

At the beginning of the season or quarterly, it is suggested that all turnbuckles be cleaned and checked for stress cracks. Oil them lightly with a fine machine oil. Make sure all turnbuckles are pinned. All cotter pins should be in place, bent back and properly taped. Cotter pins should not be re-used; replace them with new ones. You should inspect all swages periodically.

Sails

The sails are a cruising laminate, with covers to protect the cloth from unnecessary degradation by the sun. The mainsail is fully battened with lazy-jacks and two single-line reefing points or if the powered in-mast furling option is selected, the mainsail is partially battened and will not include lazy-jacks or reefing points. For electric in-mast furling, please follow the instruction manual **# 595-193-E** at the following link:
http://www.seldenmast.com/frameset.cfm?id=6611&randnum=732156098

Roller furling is provided for the Jib and Genoa, with an additional roller furling for the Screecher.

Refer to the Sailplan diagram (GA-04-02) for the sailplan and sail dimensions.

You can extend the life of the sails by doing the following:

- Protect from the sun when not in use. Use the sail cover for the main sail.
- Dry them before storing them for more than a few days.
- Do not allow them to flap or flog unnecessarily, when drying them or when becalmed. This fatigues the fabric and wears out the stitches, rapidly running your sails' effectiveness.

Running Rigging

All sheets and halyards are of Dyneema or double braid polyester. Replace any line that shows obvious broken strands. Specifications are as follows:

1	62m x 12mm Dyneema 2 to 1 Main Halyard with finished Dead end Eye
1	42m x 12mm Dyneema Genoa Halyard with 10mm screw/bar shackle
1	44m x 12mm 32 plait double braid polyester Main Topping Lift with 6mm screw/strip shackle
1	24m x 10mm Dacron braid, eye splice both ends Traveler Control Lines
1	33m x 10mm Dyneema Self-Tacking Jib Sheet
1	45m x 14mm 32 plait double braid polyester Spinnaker halyard with 87 mm snap shackle
1	61m x 12mm Dyneema 2 to 1 Screecher Halyard with 10mm screw/bar shackle
1	35m x 12mm 32 plait double braid Main Sheet with eye
2	28m x 12mm braid Genoa Sheets
1	49m x 12mm braid Screecher Sheet
1	33m x 10mm braid, continuous Screecher furling line, end spliced

The turning blocks and the main halyard require regular maintenance. The halyard sheave at the masthead also needs to be inspected at intervals. Please refer to the Selden manual for maintenance schedules, procedures and suggested parts kit. Refer to drawings SP-04-02 Turning Block Maintenance, SP-04-07 Main Halyard Maintenance and DH-04-17 Running Rigging Plans.

Clutches & Winches

The clutches and line organizers do not require service as such, but should be kept clean. As part of your maintenance procedures, and to keep your equipment in optimum working order, frequently flush it with fresh water. Do not let deck hardware come in contact with teak cleaner or other caustic solutions as this causes discoloration and damage to the finish.

Salt and grease will gum up the pawls causing the winch to become unreliable at holding loads. Please refer to the manufacturer's manuals for maintenance schedules, procedures and suggested parts kit.

OPERATION 5

Preparing for Departure – Checklist 5-1

It may be expedient to prepare a checklist for getting underway. The following is a suggested checklist:

- ✓ Seacocks open/closed
- ✓ Fuel valves open
- ✓ Engine start batteries on/off
- ✓ Main electrical system / required circuit breakers on/off
- ✓ Loose gear above/below deck secured
- ✓ Safety gear is aboard and correctly stowed
- ✓ Instruct guest unfamiliar with boat on safety gear location and use
- ✓ Sails and sail handling gear ready for correct operation
- ✓ Steering / engine controls in correct operation (before untying the boat)
- ✓ Fuel levels
- ✓ Allow engines to warm up until they have throttled back to slow idle
- ✓ Water coming out from engine exhaust
- ✓ Shore electrical power disconnected
- ✓ Ensure no lines are trailing that may foul the propellers
- ✓ Note that fenders left over the sides may scuff the gelcoat

Docking & Anchoring 5-2

See Mooring Suggestions diagrams (GA-04-07) for suggestions on how to tie up at various docks. See the Anchor Bridle Instruction diagram (SP-04-06) for suggestions on how to deploy and stow the anchor and bridle system.

It is the owner's/operators responsibility to ensure that mooring lines, towing lines, anchor chain(s), anchor lines and anchor(s) are adequate for the vessel's intended use.

Handling, Storing and Transport on Shore 5-3

Diagrams Lifting and Storage (GA-04-08) and the Dry Docking diagram (GA-04-06) demonstrate how to lift and store the vessel on shore.

Transportation on shore should be entrusted to professional boat movers.

GENERAL MAINTENANCE 6

Suggested Schedules 6-1

A practical maintenance schedule may be established based on gained experience which will determine the frequency of inspections. The overall schedule should be combined with the equipment manufacturers' recommendations, which take precedence. Maintenance for the engines may be based on a combination of use and elapsed time, rather than on a rigid schedule.

- ✓ Check fuel, engine control and exhaust systems
- ✓ Check all fasteners on lifelines and nets. Check that lifelines are tight
- ✓ Check running rigging for excessive wear
- ✓ Flush rope clutches, blocks etc., with fresh water
- ✓ Service you winches at least once during the season, more often if in a salt water environment
- ✓ Check standing rigging, looking carefully for damaged or bent wire, and cracked swages or bent turnbuckles. Check and reset tensions as required. Clean turnbuckle threads and oil lightly
- ✓ Check and lubricate turnbuckles. Replace any defective or corroded parts. Renew all tape over cotter pins
- ✓ Check batteries periodically and ensure that the electrolyte is topped up and all connections are tight
- ✓ Check propane supply lines, connections and fittings for leaks. Make sure all fittings are tight and in good physical condition
- ✓ Check that fresh water hose connections are not leaking. Clear foreign matter that could cause blockages
- ✓ Check all watertight compartments for signs of water entry
- ✓ Check operation of all seacocks – open and shut several times to ensure smooth operation
- ✓ Check steering fasteners
- ✓ Check diesel mounting bolts and shaft alignment
- ✓ Check the condition of corrosion-protection zinc anodes on underwater parts of the auxiliaries

Hull & Deck 6-2

Lifelines, Stanchions & Nets

Periodic inspection of all lifelines is suggested to ensure that turnbuckles, pelican hooks, stanchion bases, locknuts and other parts are properly tightened and secured. Look for abrasion and corrosion, particularly under the plastic coverings.

A visual inspection of the trampoline should be made periodically. Ensure that shackles are in place and pay particular attention to ensure that the bolt ropes are not beginning to pull out from the track due to a lack of tension.

Antifouling Paint

The standard antifouling paint is Pettit ACP 50 black. This is an exfoliation-style antifouling paint that will gradually lose its effectiveness over time and exposure. The vessel has been coated with Interprotect 2000 epoxy undercoat. Damage caused to the barrier coat by bottom paint removal procedures may affect the hull warranty. Please follow the manufacturer's instructions for paint preparation methods.

Topsides, Deck, Windows & Hatches

The topside and deck should be washed with non-abrasive cleaners. A small amount of ordinary dish soap in a pail of water is sufficient for normal use.

Acetone will permanently damage acrylic windows and other acrylic parts on the vessel. Note that with the exception of the glass glazing on the opening windows in the cabin bulkhead, all windows, ports, and hatches are acrylic. ***It is not recommended to use ammonia-based cleaners, such as Windex, to clean your windows and hatches.*** Use a mild solution of dish detergent and water to float off dirt if necessary, using a soft, wet cloth. There are a number of specific polishers and cleaners available at chandleries to address various scratches and nicks.

Check that all hatches are working correctly. Make sure the hinges are still tight, allowing the hatch to remain open, and adjust them if needed. Examine the seals for any sign of damage. Clean gaskets only with mild soap and water, and be sure the soap is completely removed.

Graphic Striping

Waterline and boot stripe lines and highlights are done with vinyl striping tape which may be replaced or repaired by any professional services widely available to the automotive and marine industries.

Interior 6-3

The interior wood is finished with polyurethane and can be cleaned like most domestic furniture. Damaged areas should be restored as quickly as possible to prevent underlying wood becoming dirty or discoloured.

The interior fiberglass surfaces can be washed and waxed in the same way as a car body. Scratches can be removed by buffing with automotive car compound.

The headliner is a tough vinyl product. It can be cleaned like plastic inside a car, using Armor-All, Windex or similar products. Automotive vinyl specialists can often repair tears or other damage.

The melded fabric can be cleaned like carpeting by brushing, vacuuming or steam cleaning. Household spot removers can be used on stains. Test the cleaner on an inconspicuous area and follow the directions.

Winterizing & Prevention of Freezing Damage 6-4

The vessel is particularly vulnerable to even brief intervals of sub-zero weather when hauled out, as the tempering effect of the surrounding water is lost.

Winter storage where freezing can occur requires that all water must be drained or replaced with appropriate anti-freeze fluid. This includes all services such as the fresh water (hot and cold) systems, the toilet, refrigerator, air conditioning, engines, generator, etc., which contain water or are water-cooled.

The various manufacturer manuals should be used to ensure that the correct products and procedures are used. Below are suggested procedures. If you are not comfortable with the procedures, we advise you get a professional to do it.

Engine / Generator:
The engines and generator may be winterized using the procedures recommend by the respective manufacturer's manuals.

AC Units:
The AC units may be winterized by placing their suction hoses in a pail of antifreeze mix and running the unit until antifreeze shows up at the discharge.

Fresh Water Systems:
The fresh water system may be winterized by ensuring the water tanks are empty and by placing one of the suction tubes, disconnected from the tank and placed in a pail of potable antifreeze, and pumping it through the system until it shows up at all the outlets. Before this is undertaken, water heaters should be drained and bypassed to avoid excessive consumption of antifreeze.

It is important that all branches of the water system be identifies and treated appropriately. See the Piping Plan diagram (ME-04-03) and Fresh Water diagram (ME-04-13) for information on the water system.

Watermaker:
Please follow the instructions provided by the manufacturer.

Holding Tanks:
The holding tanks should be emptied of all contents.

Suggested Spare Parts 6-5

All the products used in the construction of the vessel are selected for general world wide availability. It may be necessary to carry spares depending on the nature of the intended voyage.

- Recommended spare parts packages may be purchased for the engines and generator from the manufacturers
- Racor filter elements
- Spare fuel can and funnel
- Distilled water for batteries
- Sail tape
- Teflon-based marine gel lubricant
- Spare bulbs and fuses (see appendix)
- Other parts recommended by equipment manufacturers

Suggested Tools 6-6

Below are some tools you may want to consider having aboard. Please refer to individual manufacturer's manuals for specific tools.

Tool	Type
Screwdrivers	Philips – Large Phillips - #1 Phillips - #2 Robertson #1 Robertson #2 Standard Flat Jeweller's Flat Jeweller's Philips
Vice Grips	10"
Crescent Wrench	8" 12"
Wrench Set	Metric and Standard
Allen Key Set	Metric and Standard
Hacksaw	
Scissors	
Bolt Cutter	Sufficient for the rigging – 12mm diameter
Jumper Cables	
Multi Meter	
12v Test Light	

Troubleshooting 6-7

Engine Start/Run Issues:

Refer to the Mechanical Propulsion Diagnostic Chart in Appendix ME-04-16.

Difficulty Raising or Lowering Head Sails:

If you are experiencing difficulties lowering the head sail, check that the luff groove is not blocked or encrusted with dirt or salt. Clear it by hosing it with fresh water.

Ensure that the halyard lead is fair (not around another halyard or a deck fitting). Ensure that the sail is feeding correctly and has not pulled out of its luff.

Difficulty Raising or Lowering Main Sail:

If you are experiencing difficulties raising and lowering the main sail – inspect the following areas:

- Ensure that cars are clean and lubricated using a dry lubricant designed for this purpose and in accordance to the manufacturer's instructions.
- If sail is under load, head upwind to unload the luff.
- Make sure the turning blocks in the rope channel under the bridgedeck, below the mast base and aft are free running when under load. Resistance may be generated at the following points:
  - The sheaves and blocks located at the mast head, the headboard block, the mast base, and at the turning blocks below the winch pedestals. The blocks may be jammed, out of alignments or encrusted in dirt or salt.
- Ensure that the halyard is not twisted within the mast.
- The rope clutches may be another point of resistance.

Please refer to drawings SP-04-02 and SP-04-07

For electric in-mast furling, please follow the instruction manual **# 595-193-E** at the following link: http://www.seldenmast.com/frameset.cfm?id=6611&randnum=732156098

Genoa Won't Unfurl Completely:

The roller headsail most often fails to unfurl because the furling line is jammed at the bottom of the furling drum. Keeping a light tension on the furling line as the sail unrolls will help it to roll up smoothly on the drum without bunching or crossovers.

Steering is Heavy:

- Make sure steering wheel knob is released.
- Make sure the autopilot is disengaged.
- Make sure rotating shaft in the cockpit locker has not been fouled by loose gear.
- Make sure the tie rods and quadrants in the transom lockers are not obstructed by loose gear.
- Make sure gear box securing bolts are tight.
- Make sure rudders are not fouled.
- In the event that one rudder is seriously damaged, it may be possible to disconnect its tie rod and steer with the other rudder.

Boat Has Flooding

- Ensure electric bilge pumps are engaged. Try to keep suction screens clear of debris.
- Set up manual bilge pump. The manual bilge pump will remove water much more rapidly than an electric one in a short term.
- Water in closed compartments, bow or keel may be due to hull damage but will not sink the vessel. The access plates in the closed compartments may allow you to pump volumes of water if leakage is not too severe.

Component Power Failure:

- Refer to Electrical One Line Diagram (EL-04-04) for location of fuses and breakers.
- Turn power source off and on to reboot and clear faults.
- Check main panel breaker, check hidden breakers & fuses (several of the electronics /electrical components also have in-line fuses which should be checked).
- If an outlet is not working and the breakers are all ON, locate all the outlets with the GFI (test/reset buttons on outlets) "test/reset" buttons to be sure all are depressed in the reset position.
- Be sure you are in the appropriate configuration for the source of power (Generator/Shore) on the breaker panel.
- If an electric winch stops working, reset the breaker located "inside" the panel below the main breaker panel by pushing the red tab (located below the test button) back into the up position until it clicks back into position.

Solar Panels Charging Slowly:

While it is normal for the solar panels to charge the batteries very slowly, it is important to note that for maximum charge, each of the panels must be FULLY exposed to direct sunlight. Even partial shade will considerably affect the output. If at anchor or motoring, the shaded areas can often be removed by moving the main traveler fully to one side, loosening the main sheet and hauling up on the toping lift. This pulls the boom high and out of the way.

Fresh Water Pump Runs Excessively:

- Check to be sure the transom shower control handle is in the full OFF position.
- Check water tank levels to see if one is empty and needs to be filled or switched to the other tank. The pump may run if a tank is empty. In this case, when you open the other valve, if the pump is still running, close the empty tank valve.
- Some appliances draw water on demand (water maker flush function, ice maker, etc.) Keep in mind that if you haven't turned on any water and hear the pump running that it may be due to one of these appliances.

Holding Tank Obstruction:

An obstruction in the tank vent will cause the entire system to become inoperable. In the event that the discharge becomes obstructed, close the discharge seacock and fill the deck discharge with water from a hose. This creates a reverse flow into the tank that will usually free the obstruction. More obstinate obstructions may be dislodged by using a plunger placed over the deck discharge fitting. After these procedures, open the seacock to discharge the tank.

Drawings & Data Sheets A-1

CALCULATIONS:	ISO 12217-2 CALCULATION WORKSHEET MAST LOAD DIAGRAM (CA-04-04) CALCULATIONS HYDROSTATIC CURVES (CA-04-05)
GENERAL ARRANGEMENT:	DECK SERVICE LOCATIONS (GA-04-04) BELOW DECK SERVICE LOCATIONS (GA-04-05) ACCOMMODATION ESCAPE ROUTES (GA-04-09)
ELECTRICAL DISTRIBUTION:	WIRE CODES EL-04-01 12V SUPPLY DISTRIBUTION (EL-04-03) ELECTRICAL ONE-LINE DIAGRAM (EL-04-04) ELECTRICAL POWER FLOW DIAGRAMS (EL-01-14) ELECTRICAL DISTRIBUTION (EL-04-17) ELECTRICAL CHARGE COMBINER DIAGRAM (EL-04-18) ELECTRICAL INVERTER/CHARGER DIAGRAM (EL-04-19) OPERATING THE GENERATOR (EL-04-20) SHIP'S SERVICE BATTERIES (EL-04-25) ENGINE START BATTERIES (EL-04-26) USING A PORTABLE BATTERY CHARGER (EL-04-28)
MECHANICAL SYSTEMS:	PIPING PLAN (ME-04-03) SHAFT LINE COMPONENTS (ME-04-10) ZINC ANODE SERVICE (SP-04-09) DRIVELINE SERVICE (SP-04-10) STEERING LAYOUT (SS-04-08) FRESH WATER DIAGRAM (ME-04-13) MECHANICAL PROPULSION DIAGNOSTIC CHART (ME-04-16)
SECURING:	DRY DOCKING (GA-04-06) SECURING SHORT DOCK (GA-04-07) SECURING LONG DOCK (GA-04-07) MOORING TO PILING (GA-04-07) LIFTING AND STORAGE (GA-04-08) ANCHOR BRIDLE ASSEMBLY (DH-05-46) ANCHOR BRIDLE INSTRUCTION (SP-04-06)
SAILS & RIGGING:	SAILPLANS (GA-04-02) RUNNING RIGGING PLANS (DH-04-17) ASYMMETRIC SPINNAKER DEPLOYMENT (SP-04-01) TURNING BLOCK MAINTENANCE (SP-04-02) MAIN HALYARD MAINTENANCE (SP-04-07)
MAINTENANCE:	SPARE BULBS & FUSES (PENDING) MAJOR EQUIPMENT, DATA AND CONTACTS MAINTENANCE & REPAIR RECORD
SAFETY:	CE & ABYC LABEL REQUIREMENTS USCG ACCIDENT REPORTING REQUIREMENTS

ISO 12217-2 SAILING BOATS OF LENGTH GREATER THAN OR EQUAL TO 6m

CALCULATION WORKSHEET - No. 1

Design: 44 - ANTARES

Design Category intended: A		Monohull / Multihull: MULTIHULL		
Item	**Symbol**	**Units**	**Value**	**Ref.**
Length of hull as ISO 8666	L_H	m	13.4	3.4.1
Mass:				
Maximum total load:				3.5.4
Desired Crew Limit	*CL*	persons	6	3.6.3
Mass of:				
desired Crew Limit at 75 kg each		kg	450	
provisions + personal effects		kg	900	
fresh water		kg	630	
fuel		kg	481	
other liquids carried aboard		kg	23	
stores, spare gear and cargo (if any)		kg	100	
optional equipment and fittings not included in basic outfit		kg	100	
inflatable liferaft		kg	70	
other small craft carried aboard		kg	120	
margin for future additions		kg	250	
Maximum total load = sum of above masses	m_{MTL}	kg	3124	3.5.4
Light craft condition mass	m_{LCC}	kg	7722	3.5.1
Loaded displacement mass = $m_{LCC} + m_{MTL}$	m_{LDC}	kg	10846	3.5.6
Mass of:				
minimum number of crew		kg	150	3.5.2
essential safety requirements [not less than $(L_h-2,5)^2$]		kg	121	3.5.2
non-consumable stores and equipment normally aboard		kg	100	3.5.2
water ballast in tanks which are notified in the owner's manual to be filled whenever the boat is afloat		kg	0	3.5.2
inflatable liferaft		kg	70	3.5.2
Load to be included in Minimum Operating Condition	m_L	kg	441	3.5.2
Light Craft Condition mass	m_{LCC}	kg	7722	3.5.1
Mass in the Minimum Operating Condition = $m_{LCC} + m_L$	m_{MOC}	kg	8163	3.5.3
Is boat sail or non-sail?				3.1.2
nominal sail area	A_S	m^2	88.5	3.4.8
sail area / displacement ratio = $A_S/(m_{LDC})^{2/3}$		-	0.1806	3.1.2
CLASSIFIED AS (non-sail if $A_S/(m_{LDC})^{2/3} < 0,07$)		SAIL / NON-SAIL ?	SAIL	3.1.2

NB: If SAIL, continue using these worksheets, If NON-SAIL, use ISO 12217-1

GO TO WORKSHEET No. 2

ISO 12217-2 CALCULATION WORKSHEET - No. 2 TESTS TO BE APPLIED

Question			Answer	Ref.
Is boat fully decked? (see definition in ref.) YES / NO?			YES	3.1.8
Is boat a catamaran or trimaran? YES / NO?			YES	3.1.3 &.4
If NO, choose from options 1 to 7. If YES, then:				
Length of hull	L_H	m	13.4	3.4.1
Beam between centres of buoyancy of sidehulls	B_{CB}	m	4.88	3.4.5
Is ratio $L_H / B_{CB} > 5$ YES / NO?			No	7.1
If YES, treat the boat as a monohull, and use options 1 to 7. If NO, use option 8				
Mass in the minimum operating condition	m_{MOC}	kg	8163	3.5.3
Mass in the loaded displacement condition	m_{LDC}	kg	10846	3.5.6
NB: If mLDC / mMOC > 1,15 then all worksheets marked with * below must be completed for both conditions				(1.32)

Choose any ONE of the following options, and use the worksheets indicated for that option.

		All boats except catamarans and trimarans with $L_H / B_{CB} \leq 5$							Cats/Tris
Option		1	2	3	4	5	6	7	8
Categories possible		A + B	C + D	C + D	C + D	C + D	C + D	C + D	A - D
Decking or covering		fully decked	any amount	any amount	any amount	any amount	any amount	any amount	any amount
Downflooding openings		3	3	3	3	3	3		3
Downflooding angle		3*	3*						
Downflooding height test	*all boats*	3	3	3		3			
	full method	4	4	4		4			
Stability index		5*	5*						
Angle of vanishing stability		6*	6*						
Knockdown recovery test				7	7				
Wind stiffness test						8	8		
Flotation requirement					9		9		9
Capsize recovery test								10	
Multihull size factor									11
Stability information									12
SUMMARY		13*	13*	13	13	13	13	13	13
Option selected									8

Recess limitations (Option 1 only):

Item	Symbol	Unit	Value	Ref.
Plan area of all recesses	A_R	m^2		6.1.5
Plan area of all recesses forward of LH/2	A_{RF}	m^2		6.1.5
Ratio of total area recess plan area to length * beam	A_R/L_HB_H	-		6.1.5
Design category possible (A if < 0,2 ; B if < 0,3)				6.1.5
Ratio of forward area recess plan area to length * beam	A_{RF}/L_HB_H	-		6.1.5
Design category possible (A if < 0,1 ; B if < 0,15)				6.1.5

ISO 12217-2 CALCULATION WORKSHEET - No. 3 DOWNFLOODING

Downflooding Openings:

Question	Answer	Ref.
Have all appropriate downflooding openings been identified? YES/NO	YES	6.2.1.1
Do all closing appliances satisfy ISO 12216? YES/NO	YES	6.2.1.2
Opening type appliances are not fitted below 0,2 m above waterline unless they comply with ISO 9093 or ISO 9094? YES/NO	YES	6.2.1.3
Are all openings fitted with closing appliances? (except openings for ventilation and engine combustion) YES/NO	YES	6.2.1.5
Categories possible: A or B if all are YES, C or D if first three are YES	A or B	6.2.1

Downflooding Angle:

Item	Symbol	Units	Value	Ref.
Required value:				6.2.3
Cats A + B = 40°, Cat C = 35°, Cat D = 30°	$\phi_{D(R)}$	degrees	40°	Table 3
Actual Downflooding Angle: to any opening at m_{MOC}	ϕ_{DA}	degrees	75°	3.3.2
If m_{LDC} / m_{MOC} > 1,15 then also at m_{LDC}	ϕ_{DA}	degrees	64°	3.3.2
Method used to determine ϕ_{DA}:	Computer – Theoretical Calculation			Annex B
Category possible on Downflooding Angle ϕ_{DA}:			A or B	6.2.3
Actual Downflooding Angle: to non-quick-draining cockpit	ϕ_{DC}	degrees	180°	3.3.2
Actual Downflooding Angle: to main hatchway	ϕ_{DH}	degrees	148°	3.3.2

Downflooding Height:

Requirement			Basic requirement	Reduced value for small openings
		applicable to	options 1 to 6 and 8	options 1 to 6 and 8, but only if figures are used
		Ref.	6.2.2.2 a)	6.2.2.2 b)
Obtained from Figure 2 or annex A?			Annex A	= basic x 0,75
Maximum area of small openings ($50L_H^2$) (mm^2) =				
Required	Fig. 2 / annex A	Category A	0.7	
Downflooding	Fig. 2 / annex A	Category B		
Height	Fig. 2 / annex A	Category C		
H_D (m)	Fig. 2 / annex A	Category D		
Actual Downflooding Height h_D Ref.: 6.2.2.1			1.2	
		Design Category possible	A or B	
Overall Design Category possible on Downflooding Height = lowest of above				A

ISO 12217-2 CALCULATION WORKSHEET- No. 9 FLOTATION REQUIREMENT

Annex D

Objective: to show that the buoyancy available from the hull structure, fittings and flotation elements equals or exceeds that required supporting the loaded boat.

Item	Mass kg	Density kg/m³	Volume m³ = mass/density	Ref.
Hull structure:				
GRP laminate	3318	1 500	2.2	Table D.1
Foam core materials	221	50	4.42	Table D.1
Balsa core materials	21.6	150	0.144	Table D.1
Plywood	652.4	600	1.09	Table D.1
Other timber (type = TRI-CELL)	278.7	171	1.63	Table D.1
Permanent ballast (type = None)	—	—	—	Table D.1
Fastenings and other metalwork (type = Stainless Steel)	450	7800	0.05	Table D.1
Windows (glass / plastic)	272	1200	0.22	Table D.1
Engines and other fittings and equipment:				
Diesel engine(s)	500	5 000	0.10	Table D.1
Petrol engine(s)		4 000		Table D.1
Outboard engine(s)		3 000		Table D.1
Sail-drive or stern-drive strut(s)		3 000		Table D.1
Mast(s) and spar(s) (material = alloy / spruce)	200	2700	0.07	Table D.1
Stowed sails and ropes	168	1 200	0.14	Table D.1
Food and other stores	200	2 000	0.10	Table D.1
Miscellaneous equipment	1000	2 000	0.50	Table D.1
Non-integral fuel tank(s) (material = Aluminum)	27	2700	0.01	Table D.1
Non-integral water tank(s) (material = Aluminum)	45	2700	0.02	Table D.1
Gross volumes of fixed tanks and air containers:				
Fuel tank(s)			0.57	D.2.2
Water tank(s)			0.48	D.2.2
Other tank(s)			0.23	D.2.2
Air tanks or containers meeting the requirements of annex E			1.20	D.2.2
Total volume of hull, fittings and equipment, V_B = sum of all above volumes			13.17	D.2.2
Loaded displacement mass	m_{LDC}	kg	10846	3.5.6
Calculate ratio m_{LDC} / V_B =			823	D.2.3
For option 1 alternative for Category B, and option 8, m_{LDC} / V_B < 850		YES / NO?	YES	D.2.3
For options 4 and 6, m_{LDC} / V_B < 1 000		YES / NO?	YES	D.2.3

ISO 12217-2 CALCULATION WORKSHEET - No. 11 MULTIHULL SIZE FACTOR

Boat is a catamaran / trimaran: CATAMARAN

Intended Design Category: A

Item	Symbol	Units	Value	Ref.
Minimum operating mass	m_{MOC}	kg	8163	3.5.3
Length of hull (as ISO 8666)	L_H	m	13.4	3.4.1
Beam between centres of buoyancy of sidehulls	B_{CB}	m	4.88	3.4.5
For catamarans	$L/B = L_H/B_{CB}$ =		2.766	Table 7
For trimarans	$L/B = 2\,L_H/B_{CB}$ =		N/A	Table 7
Required multihull size factor (from Table 7) for intended Design Category			40,000	Table 7
Actual multihull size factor = 1,75 $m_{MOC}\sqrt{(L_H B_{CB})}$ =			115,948.4	7.7
Actual value exceeds required value	YES / NO?		YES	7.7
Design Category assigned:			A	7.7

ISO 12217-2 CALCULATION WORKSHEET - No. 12 **STABILITY INFORMATION**

Preliminary Information

Item	Value	Ref.
Boat is a catamaran or a trimaran?	CATAMARAN	3.1.3 + 3.1.4
Method of determination: calculation using Annex G, or sailing trials?	ANNEX G	7.4 b)

Calculation using Annex G:

Item	Symbol	Units	Minimum operating condition	Loaded displacement condition	Ref.
Mass of craft (for load condition under consideration)	m	kg	8163	10846	
Length of hull (as ISO 8666)	L_H	m	13.40	13.40	3.4.1
Length waterline (as ISO 8666)	L_{WL}	m	13.20	13.20	3.4.2
Beam waterline (as ISO 8666)	B_{WL}	m	1.20	1.20	3.4.4
Beam between centres of buoyancy of sidehulls	B_{CB}	m	4.87	4.87	3.4.5
Height of CG above bottom of canoe body	VCG	m	2.02	1.78	G.2.1
Total waterplane area of all hulls at design waterline	A_W	m²	11.73	11.73	G.2.2
Estimated angle of heel of maximum GZ (for catamarans only = $\tan^{-1}\left[\frac{m}{254 L_{WL} B_{WL} B_{CB}}\right]$) =	ϕ_{GZmax}	degrees	22.62°	28.97°	G.2.1
Calculate ratio $(L_H + L_{WL}) / B_{CB}$ =			5.46	5.46	G.1
NB: where $(L_H + L_{WL}) / B_{CB} \geq 4$, only limiting moment in roll is considered ← This condition Applied where $(L_H + L_{WL}) / B_{CB} < 4$, the lesser value of limiting moment in roll and pitch is used.					
Limiting moment in roll: (for catamarans only = $9{,}4m[(0{,}5B_{CB}\cos\phi_{GZmax}) - (VCG \sin\phi_{GZmax})]$)	LM_R	Nm	112,854.9	129,293.1	G.2.1
Limiting moment in pitch: (for catamarans only = $2{,}45\, m\, A_W / B_{WL}$)	LM_P	Nm	N/A	N/A	G.2.2
Limiting moment to be used:	LM	Nm	112,854.9	129,293.1	G.1

Calculated wind speed limit for following sail combinations $=1{,}6\sqrt{\frac{(LM_R \text{ or } LM_P)}{A_S'(h_{CE}+h_{LP})}}$	Rig	A_S' (m²)	$h_{CE}+h_{LP}$ (m)	v_W (m/s)		Ref.
	light weather	88.5	9.16	18.9	20.2	G.1
	working sails	80.1	9.24	19.75	21.2	
	first reef	66.2	8.55	22.6	24.3	
	second reef	54.6	7.84	26.0	27.9	
	storm rig	27.4	7.65	37.1	39.9	

ISO 12217-2 CALCULATION WORKSHEET - No. 13 — SUMMARY

Design Description:	44' CATAMARA				
Design Category intended:	A	**Crew Limit:**	6	**Date:**	DEC 23/03

sheet	Item	Symbol	Units	Value
1	**Length of hull:** (as ISO 8666)	L_H	m	13.4
	Mass:			
	Maximum total load	m_{MTL}	kg	3124
	Light craft condition mass	m_{LCC}	kg	7722
	Loaded displacement mass $= m_{LCC} + m_{MTL}$	m_{LDC}	kg	10846
	Minimum operating mass	m_{MOC}	kg	8163
1	**Is boat sail or non-sail?**	SAIL / NON-SAIL		SAIL
2	**Option selected:**			8

sheet	Item	Units	Required	Actual	Pass/Fail
3	**Downflooding openings:**		are all requirements met?		Yes
	Downflooding angle: to any opening, ϕ_{DA}	degrees	> 40	75°	PASS
	to non-quick-draining cockpit, ϕ_{DC}	degrees			
	to main access hatchway, ϕ_{DH}	degrees		148°	
3 and 4	**Downflooding height:**	Worksheet employed for basic height			
	basic requirement	m	≥ 0.70	1.20	PASS
	reduced height for small openings (sheet 3 only)	m	≥		
5 & 6	**Stability index:** *(options 1 & 2 only)* *STIX* =	-	>		
6	**Angle of Vanishing Stability:** *(option 1 & 2 only)* ϕ_V=	degrees	>		
7	**Knockdown Recovery Test:** *(options 3 & 4 only)*			PASS / FAIL?	
	Method used = experimental or theoretical?				
	Design Category recommended by the builder				
8	**Wind Stiffness Test:** *(options 5 & 6 only)* v_W =	m/s	>		
	Design Category recommended by the builder				
	Was reefed sail area used? (i.e.: are warning labels required?)				
9	**Flotation Requirement:** ratio m_{LDC} / V_B = *(options 4, 6 & 8 only)*	kg/m^3	< 850	823	PASS
10	**Capsize Recovery Test:** *(option 7 only)*		are all requirements met?		
	Design Category recommended by the builder				
11	**Multihull Size Factor:** *(option 8 only)*	size factor	>40,000	115,948	PASS
12	**Stability Information:** *(option 8 only)* info. supplied like Table F.1			YES/NO?	YES

NB: Boat must pass all requirements applicable to option to be given intended Design Category.

Design Category given:	A	Assessed by:	TED CLEMENTS

Symbol	Unit	Value	Meaning
m	kg		Mass of the boat in the appropriate loading condition
m_{LCC}	kg		Mass in light craft condition, see 3.5.1
m_{LDC}	kg		Loaded displacement mass, see 3.5.5 and 3.5.6
m_{MOC}	kg		Mass in minimum operating condition, see 3.5.2
m_{MTL}	kg		Mass of the maximum total load, see 3.5.4
RM	Nm		Righting moment, see 3.6.7
$STIX$	-		Actual stability index value at the appropriate loading condition according to 6.4
$STIX_{(R)}$	-		Required stability index value, see 6.4.9
T_C	m		Draught of canoe body at the appropriate loading condition according to ISO 8666
V_D	m^3		Displacement volume, see 3.5.7
VCG			Vertical position of the centre of gravity
V_R	m^3		Volume of a non-quickdraining recess, see Annex A
v_W	m/s		Calculation wind speed, see 3.6.1
x_D	m		Longitudinal distance of downflooding opening from nearest end of boat
x_D'	m		Longitudinal distance of downflooding opening from forward end of boat
y_D	m		Transverse distance of downflooding opening from periphery of boat
y_D'	m		Transverse distance of downflooding opening off centreline
z_D	m		Height above waterline of downflooding opening

Wind Heeling Calculations per ISO 12217 Annex G.

for

PDQ 44

VCG : (*vertical moment /mass, from weight study*)

At M_{LCC} — *77246 lb.ft. / 16990 lb. = (DWL) + 4.55 ft.*
10680 kg.m. / 7722 kg. = **1.38 m.**
+.65 m. (for canoe body) = **2.03**

At M_{MOC} — *80843 lb.ft. / 17960 lb. = (DWL) + 4.50 ft.*
11177 kg.m. / 8163 kg. = 1.37 m.
+.65 m. (for canoe body) = **2.02**

At M_{LDC} — *88419 lb.ft. / 23861 lb. = (DWL) + 4.71 ft.*
12224 kg.m. / 10846 kg. = 1.13 m.
+.65 m. (for canoe body) = **1.78** m.

Angle of Heel of Maximum GZ

$\phi_{GZ\,max.}$ (M_{MOC}) = $\tan^{-1}[m/(254 \times L_{WL} \times B_{WL} \times B_{CB})]$
$\tan^{-1}[8163/(254 \times 13.20 \times 1.20 \times 4.87)]$
= 22.62 °

$\phi_{GZ\,max.}$ (M_{LDC}) = $\tan^{-1}[m/(254 \times L_{WL} \times B_{WL} \times B_{CB})]$
$\tan^{-1}[10846/(254 \times 13.20 \times 1.20 \times 4.87)]$
= 28.97 °

$(L_H + L_{WL}) / B_{CB}$= (13.4 + 13.2) / 4.87 =5.46 > 4 ∴ only limiting moment in roll is considered

Limiting moment in roll:

LM_R (M_{MOC}) =9.4 x M [(0.5 x B_{CB} x cos ϕ GZ max.) – (VCG x sin ϕ GZ max.)]
=9.4 x 8163[(0.5 x 4.87 x cos 22.62) – (2.02 x sin 22.62)]
=**112,854.9 Nm.**

LM_R (M_{LDC}) =9.4 x M [(0.5 x Bcb x cos ϕ GZ max.) – (VCG x sin ϕ GZ max.)]
=9.4 x 10846[(0.5 x 4.87 x cos 28.97) – (1.78 x sin 28.97)]
=**129,293.1 Nm.**

Wind Speed Limits
for
PDQ 44

Calculated per ISO 12217-2 by PDQ Yachts, Dec. 16, 2003

M_{moc} (*hull profile centroid at dwl -.50 M*):

- light weather, (*Gen. + Main*)

$v_W = 1.6\ [LM_R / A_S' (h_{CE} + h_{LP})]^{1/2}$
$=1.6\ [112{,}855/ 88.5 \times (8.66+.50)]^{1/2}$
=18.9K

- working sail, (*Jib + Main*)

$v_W = 1.6\ [LM_R / A_S' (h_{CE} + h_{LP})]^{1/2}$
$=1.6\ [112{,}855/ 80.1 \times (8.74+.50)]^{1/2}$
=19.75 K

1st reef

$v_W = 1.6\ [LM_R / A_S' (h_{CE} + h_{LP})]^{1/2}$
$=1.6\ [112{,}855/ 66.2 \times (8.05+.50)]^{1/2}$
=22.6 K

2nd reef

$v_W = 1.6\ [LM_R / A_S' (h_{CE} + h_{LP})]^{1/2}$
$=1.6\ [112{,}855/ 54.6 \times (7.34+.50)]^{1/2}$
=26.0 K

- storm (*Jib*)

$v_W = 1.6\ [LM_R / A_S' (h_{CE} + h_{LP})]^{1/2}$
$=1.6\ [112{,}855/ 27.4 \times (7.15+.50)]^{1/2}$
=37.1 K

M_{LDC} (*hull profile centroid at dwl -.43 M*):

- light weather, (*Gen. + Main*)

$v_W = 1.6\ [LM_R / A_S' (h_{CE} + h_{LP})]^{1/2}$
$=1.6\ [129{,}293/ 88.5 \times (8.66+.43)]^{1/2}$
=20.2 K

- working sail, (*Jib + Main*)

$v_W = 1.6\ [LM_R / A_S' (h_{CE} + h_{LP})]^{1/2}$
$=1.6\ [129{,}293/ 80.1 \times (8.74+.43)]^{1/2}$
=21.2 K

1st reef

$v_W = 1.6\ [LM_R / A_S' (h_{CE} + h_{LP})]^{1/2}$
$=1.6\ [129{,}293/ 66.2 \times (8.05+.43)]^{1/2}$
=24.3 K

2nd reef

$v_W = 1.6\ [LM_R / A_S' (h_{CE} + h_{LP})]^{1/2}$
$=1.6\ [129{,}293/ 54.6 \times (7.34+.43)]^{1/2}$
=27.9 K

- storm, (*Jib*)

$v_W = 1.6\ [LM_R / A_S' (h_{CE} + h_{LP})]^{1/2}$
$=1.6\ [129{,}293/ 27.4 \times (7.15+.43)]^{1/2}$
=39.9 K

Sail Properties

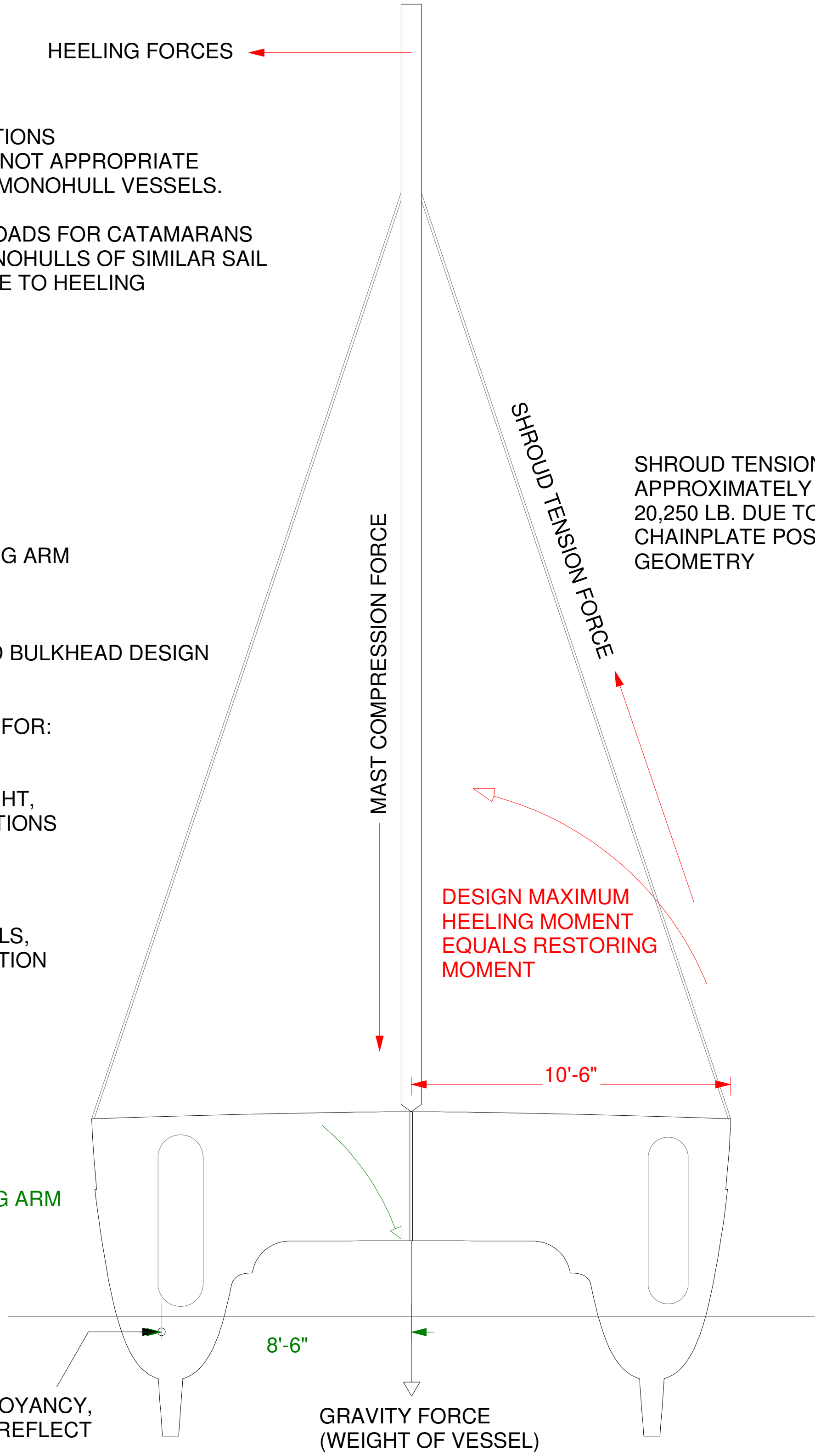
For mast truck 62' above w.l., 19' boom, 36" mast rake, mast step 72" fwd. of m.s., full roach

	Area*	Centroid Height (wl)
Main sail:	62.8 M^2	9.67 M
1st reef:	45.5M^2	8.74 M
2nd reef:	33.9 M^2	7.77 M
Jib:	27.4 M^2	7.15 M
Genoa:	39.8 M^2	7.09 M
Spinnaker:	86.6 M^2	9.80 M
Main and Jib:	80.1 M^2	8.74 M
1st reef and Jib:	66.2 M^2	8.05 M
2nd reef and Jib:	54.6 M^2	7.34 M
Main and Gen.:	102.6 M^2	8.90 M
less overlaps:	88.5 M^2	8.66 M

*All values derived from computer analysis of sail models.

THIS DIAGRAM REFLECTS THE CONDITIONS APPLICABLE TO CATAMARANS AND IS NOT APPROPRIATE FOR CONSIDERATION OF BALLASTED MONOHULL VESSELS.

TYPICALLY THE SPAR AND RIGGING LOADS FOR CATAMARANS ARE 1.5 TIMES HIGHER THAN FOR MONOHULLS OF SIMILAR SAIL AREA DUE TO THEIR HIGH RESISTANCE TO HEELING



SHROUD TENSION IS APPROXIMATELY 20,250 LB. DUE TO CHAINPLATE POSITION GEOMETRY

MAST COMPRESSION
= HEELING MOMENT / HEELING ARM
=204,000ft.lb. / 10.5ft.
=19,428 lb.
TIMES SAFETY FACTOR OF 3,
USE 60,000 lb. FOR MAST AND BULKHEAD DESIGN

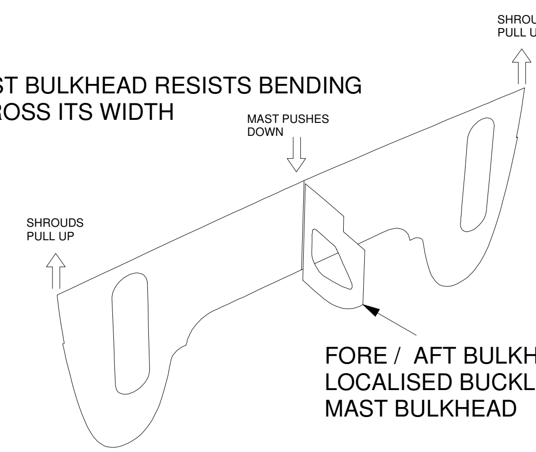
SAFETY FACTOR ACCOUNTS FOR:
INERTIAL LOADS,
EXTREME CONDITIONS
VARIATIONS IN VESSEL WEIGHT,
MATERIAL PROPERTY VARIATIONS

MAST DESIGN CONSIDERS:
COMPRESSION LOADS,
BENDING LOADS DUE TO SAILS,
INERTIAL LOADS DUE TO MOTION

RESTORING MOMENT
= VESSEL WEIGHT X RIGHTING ARM
=24,000 lb. X 8.5ft.
=204,000 ft.lb.

HEELING PIVOT IS CENTRE OF BUOYANCY, OUTBOARD OF HULL CENTRE TO REFLECT HEELED CONDITION AT 15°+/-

MAST BULKHEAD RESISTS BENDING ACROSS ITS WIDTH

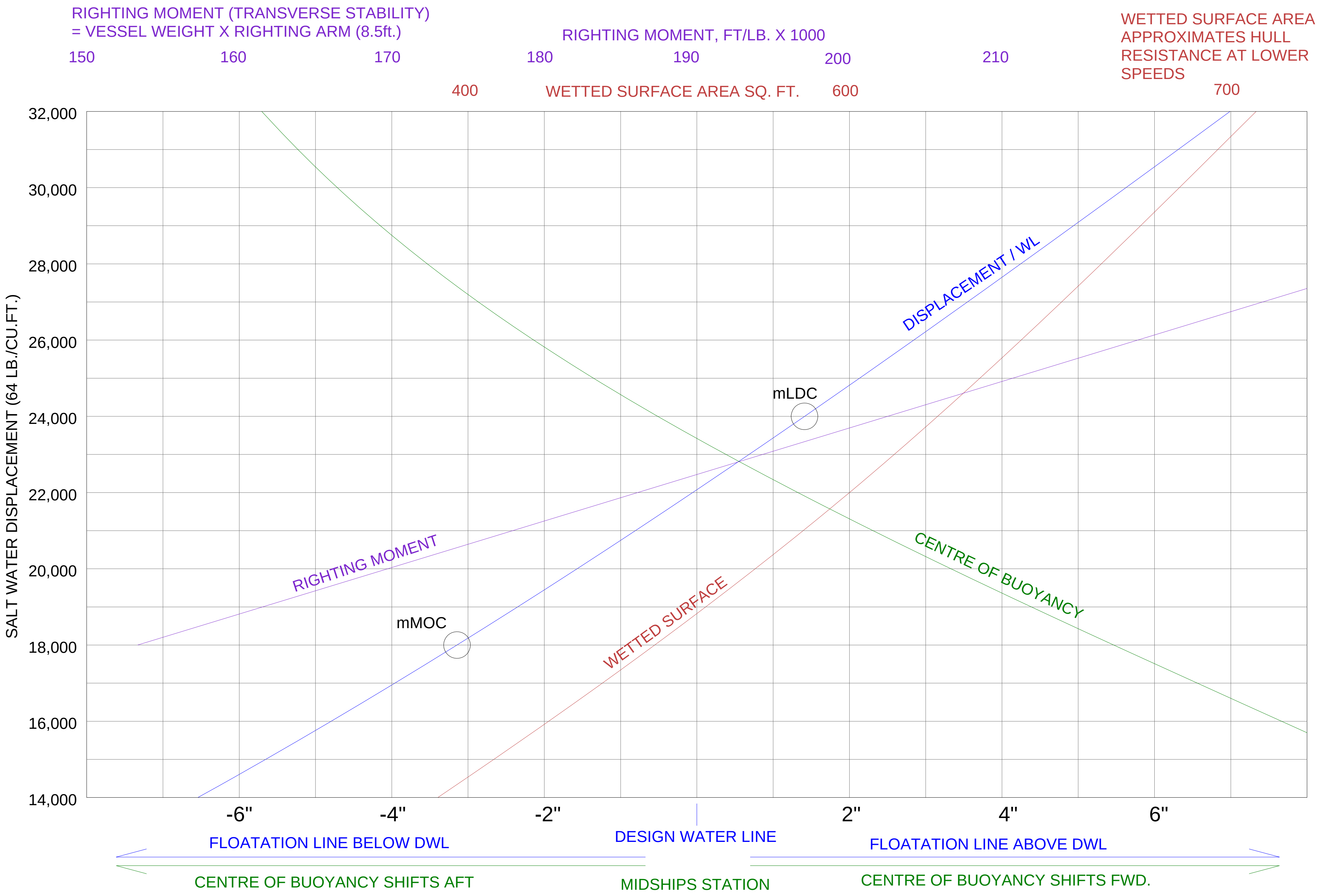


FORE / AFT BULKHEAD RESISTS LOCALISED BUCKLING OF MAST BULKHEAD

ANTARES 44 CALCULATIONS
MAST LOAD DIAGRAM
CA-04-04

ISSUED JUNE 10, 2008

T.C.



FOR CE OCEAN CLASS "A"
CERTIFICATION CALCULATIONS:
mMOC = MINIMUM OPERATIONAL CONDITION
mLDC = LOADED DISLACEMENT CONDITION

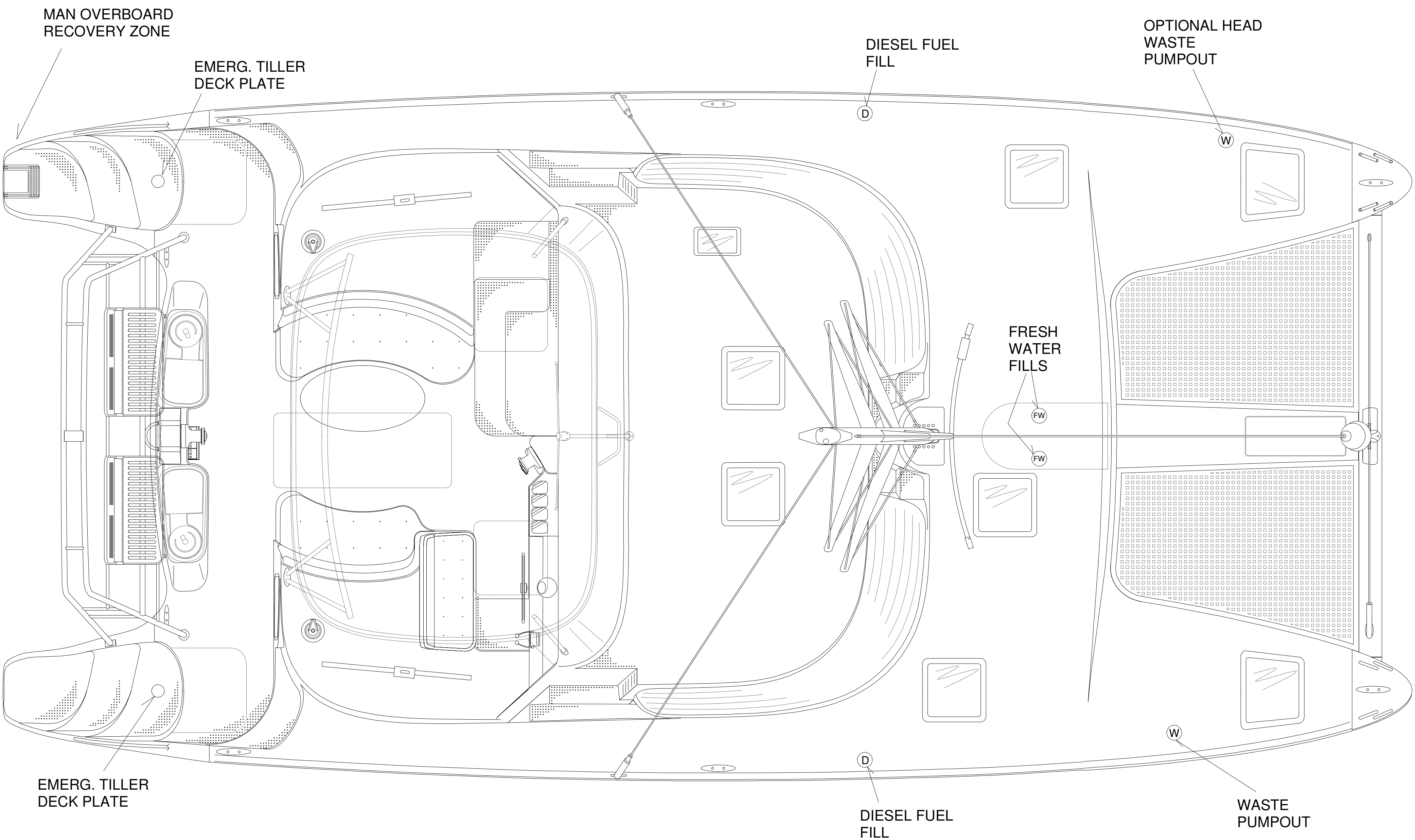
DISPLACEMENT CHANGE
IN SALT WATER IS
APPROXIMATELY
1,300 LB. PER INCH OF IMMERSION

MOMENT TO TRIM 1"
=2900 FT.LB.

ANTARES 44 CALCULATIONS
HYDROSTATIC CURVES
CA-04-05

ISSUED JUNE 10, 2008

TC



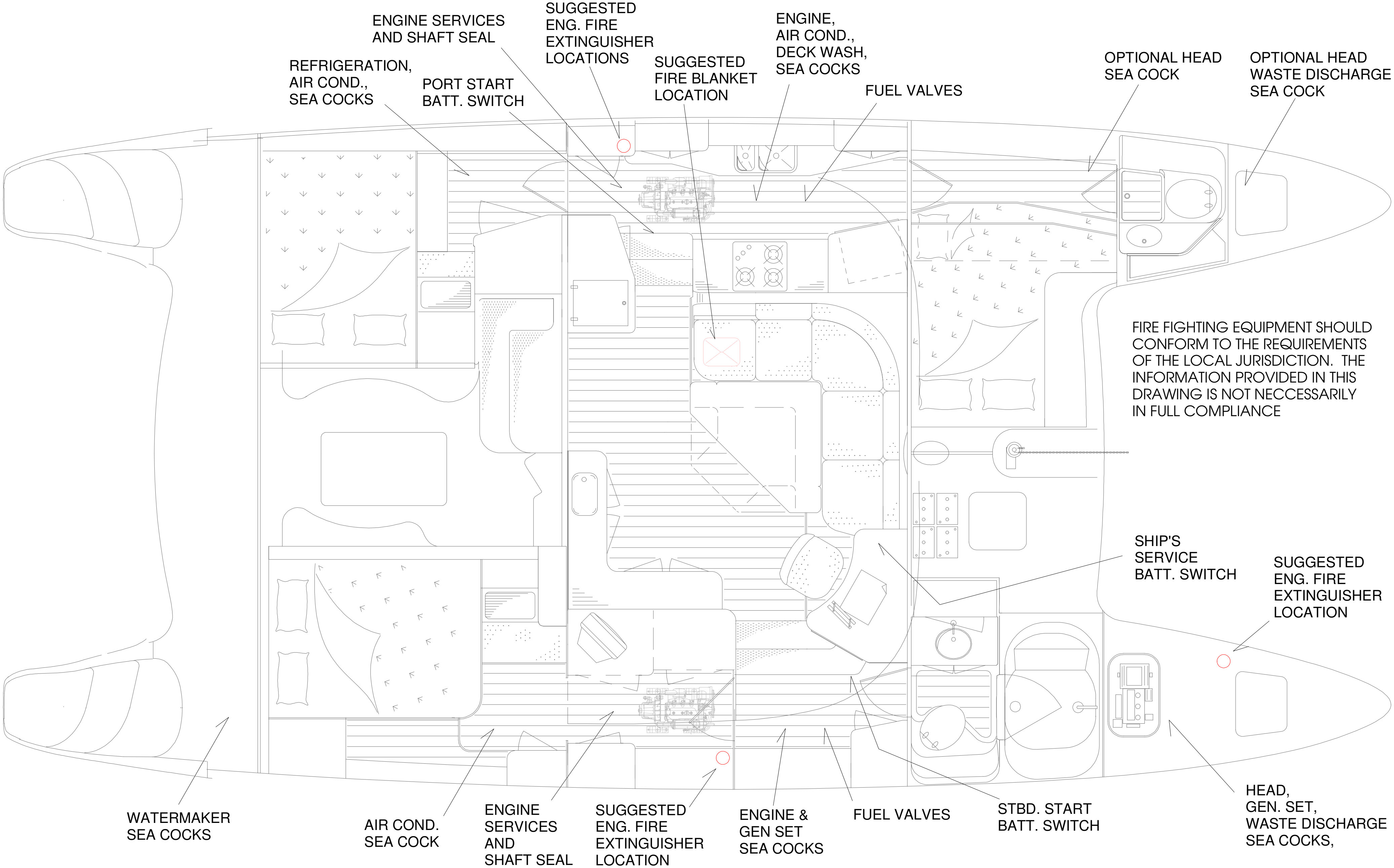
THIS DRAWING IS INTENDED AS A STUDY PLAN ONLY. OPTIONAL EQUIPMENT MAY BE DEPICTED, PLEASE CALL TO CONFIRM YOUR VESSEL SPECIFICATIONS

Antares
YACHTS

44 DECK SERVICE LOCATIONS

Web www.liveantares.com
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JUNE 21, 2006 GA-04-04



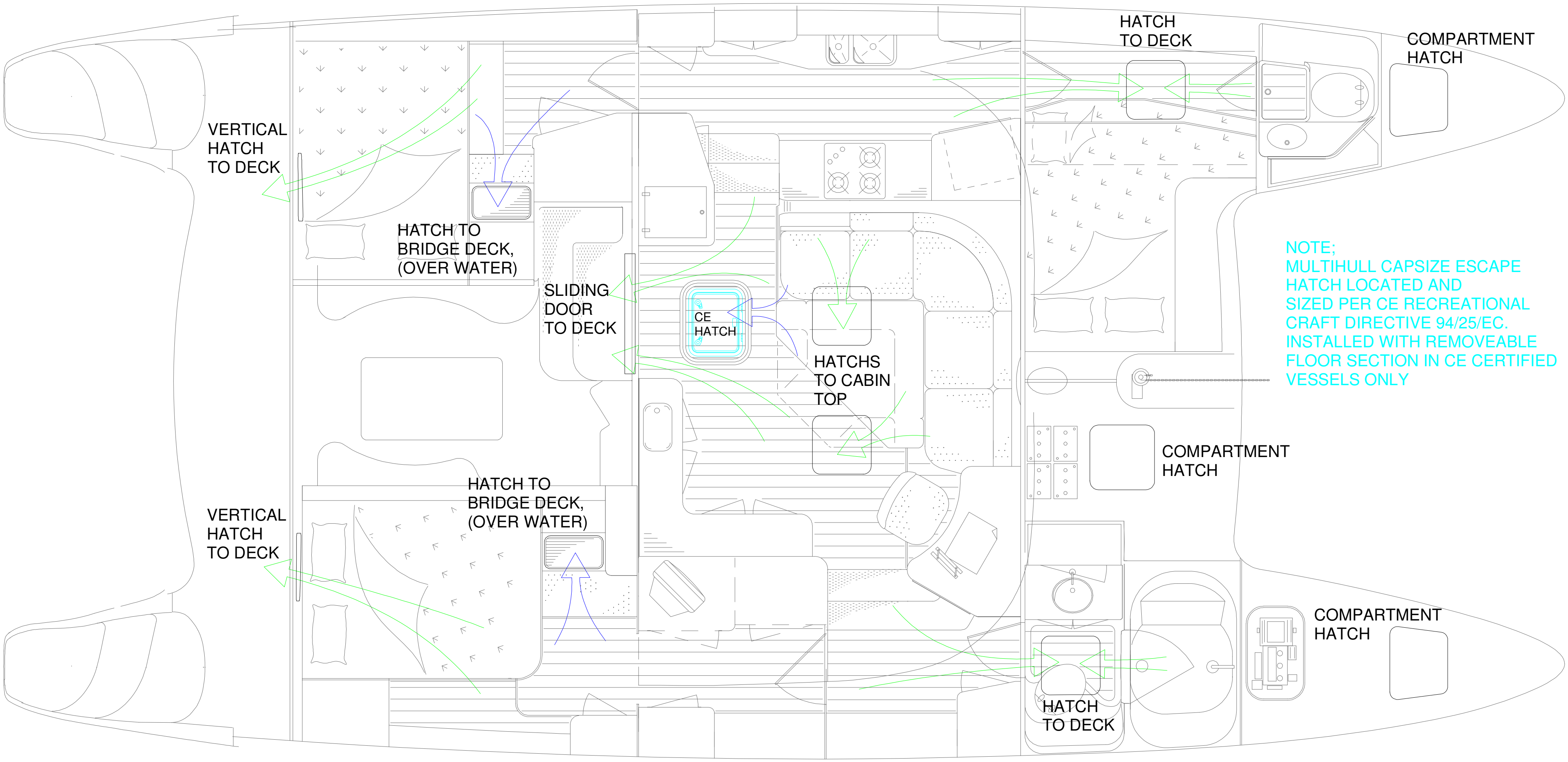
THIS DRAWING IS INTENDED AS A STUDY PLAN ONLY. OPTIONAL EQUIPMENT MAY BE DEPICTED, PLEASE CALL TO CONFIRM YOUR VESSEL SPECIFICATIONS

Antares
YACHTS

44 BELOW DECK SERVICE LOCATIONS

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JUNE 21, 2006 GA-04-05



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YACHTS

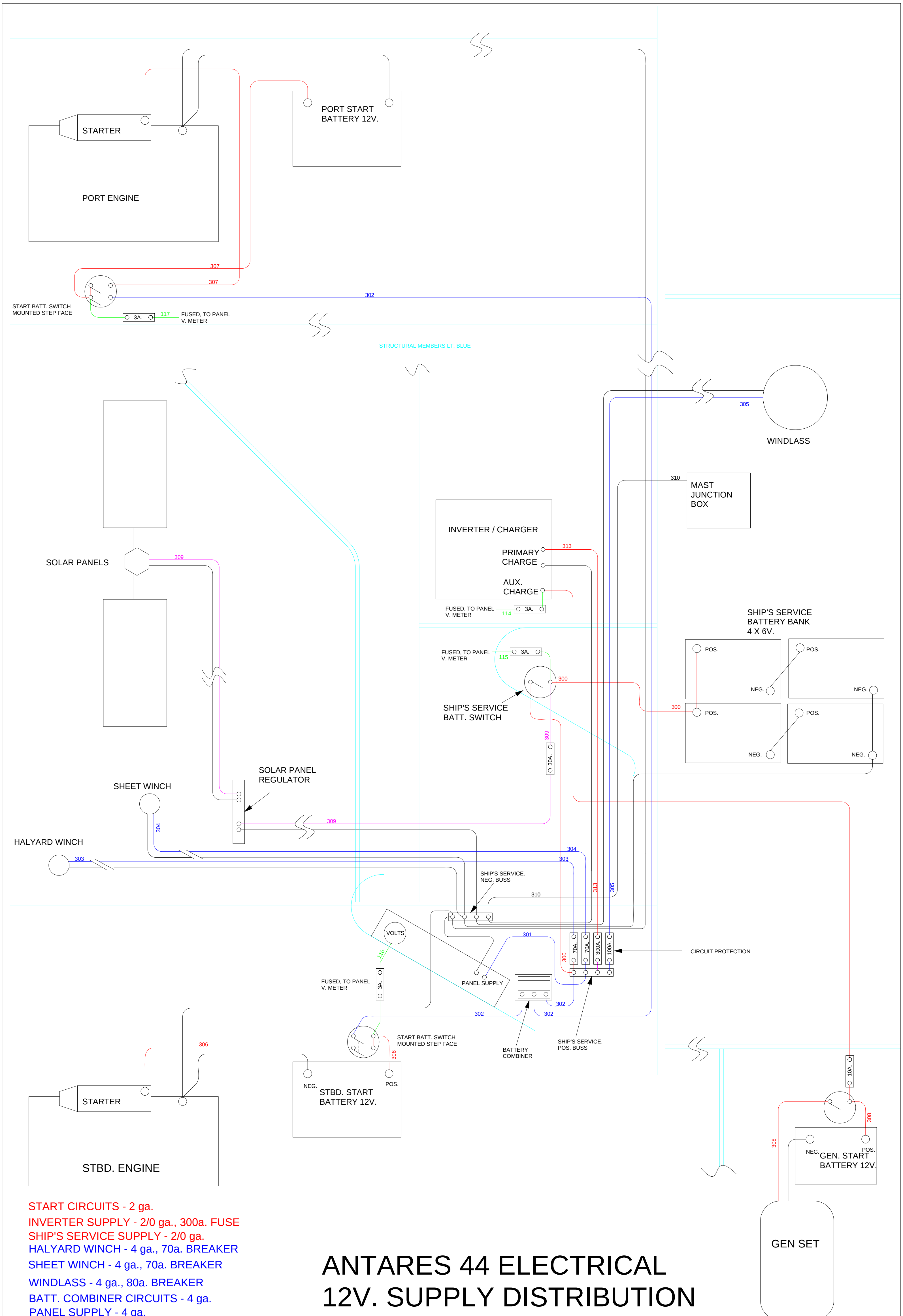
44 ACCOMMODATION ESCAPE ROUTES

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JUNE 11, 2008 GA-04-09

ANTARES YACHTS ELECTRICAL WIRING CODES

12VDC DISTRIBUTION		12VDC DISTRIBUTION		110 VAC		12VDC HIGH CURRENT	
001	SUB PANEL SUPPLY	101	NAV LIGHTS	201	GENERATOR INPUT	300	SHIP SERVICE BATT.
002	STBD FWD LIGHTS	102	TRI-COLOUR	202	STBD OUTLETS	301	DISTRIB. PANEL FEED
003	TOILET VACUUM PUMP	103	ANCHOR LIGHT	203	STBD WATER HEATER	302	BATT. COMBINER
004	SALOON TABLE	104	SPREADER LIGHT	204	STBD AIR CONDITIONER	303	HALYARD WINCH
005	RADAR	105	COCKPIT LIGHTS	205	PORT WATER HEATER	304	SHEET WINCH
006	VHF RADIO	106	COMPASS LIGHT	206	PORT AIR CONDITIONER	305	WINDLASS PRIMARY ANCHOR
007	GPS/CHART PLOTTER	107	INSTRUMENTS	207	STOVE	306	STBD ENGINE
008	SHOWER SUMP PUMP (S.)	108	TANK MONITORS	208	MICROWAVE	307	PORT ENGINE
009	FRESHWATER PUMP	109	WINDOW WASHERS	209	OVEN	308	GENERATOR (12v)
010	STBD BILGE PUMP (A.)	110	STERN LIGHT	210	GALLEY OUTLETS	309	SOLAR PANELS
011	STBD AFT LIGHTS	111	STEAMING LIGHT	211	PORT OUTLETS	310	NEGATIVE FEED MAST (J. BOX)
012	ENGINE ROOM BLOWERS	112	UNDER WATER LIGHTS	212	SALOON AIR COND.	311	WIND GENERATOR
013	SSB RADIO	113	F.B. FRIDGE 12VDC	213	SHORE 1	312	F.B. BUS SUPPLY
014	PORT AFT LIGHTS	114	GEN SET V.METER	214	SHORE 2	313	INVERTER (12v)
015	COURTESY LIGHTS	115	SHIP SERVICE V. METER	215	WASHER/DRYER	314	OVHD. CONSOLE BUS + SUP.
016	DECK WASH PUMP	116	STBD ENG. V. METER	216	INVERTER INPUT (120V)	315	ELECTRIC WINCH 1 (EXTRA)
017	PORT BILGE PUMP (A.)	117	PORT ENG. V. METER	217	INVERTER OUTPUT (120V)	316	ELECTRIC WINCH 2 (EXTRA)
018	PORT FWD LIGHTS	118		218	AFT CABIN AIR COND.	317	ELECTRIC WINCH 3 (EXTRA)
019	FREEZER (12v)	119		219	FREEZER (120V)	318	
020	REFRIGERATOR (12v)	120		220	REFRIGERATOR (120V)	319	HELM BUS + SUP.
021	LIGHTING BREAKERS	121		221	ICEMAKER	320	NEG. HELM BUS
022	SALOON LIGHTS	122		222	STBD FWD OUTLETS	321	NEG. F.B. BUS
023	12v OUTLET HELM	123		223	STBD. AFT OUTLETS	322	NEG. OVHD. CONSOLE BUS
024	12v OUTLETS FWD	124	AUTOPILOT	224	PORT FWD OUTLETS	323	
025	FUEL GAUGE	125	MAST LIGHT	225	PORT AFT OUTLETS	324	
026	HEAD BLOWER	126		226	OUTLET F.B.	325	
027	DINING LIGHT	127		227	SALOON OUTLETS	326	
028	WATER MAKER (12v)	128		228	WATER MAKER (120v)	327	
029	BATTERY CHARGER (12v)	129		229	BATT. CHARGER (120v)	328	
030	12v OUTLET FLYBRIDGE	130		230	OPTION OUTLETS (120V)	329	WARPING WINDLASS
031	HORN	131	NAV AIDS	231	GEN. AUX. WATER PUMP	330	WINDLASS SECONDARY ANCHOR
032	WIPERS	132		232			
033	PROPANE SYSTEM			233			
034	ENGINE ROOM LIGHTS			234			
035	STOVE (12v)			235			
036	BAT. MONITORING SYS			236			
037	CABIN FANS			237			
038	GLEN-DINNING CNTRLS.			238			
039	STEREO (12v)			239	ENTERTAINMENT		
040	FUEL TRANSFER PUMP						
041	TV SYSTEM (12v)						
042	ELECTRIC HEAD (S.)						
043	GREY WATER PUMP						
044	OVEN (12v)						
045	SEARCH LIGHT						
046	SONAR						
047	CABIN HEATER						
048	MACERATOR						
049	AFT CAB. READING LTS.						
050	SHOWER SUMP (P.)						
051	BILGE PUMP (S.F.)						
052	BILGE PUMP (P.F.)						
053							
054	ELECT. HEAD (P.)						
055	BILGE PUMP (GEN. COMP.)						
056	BILGE PUMP (P. MID.)						
057	GEN. FUEL PUMP						
058	E.R. BLOWER (P)						
059	LTS. (E.R. P.)						
060	ARCH LIFT						

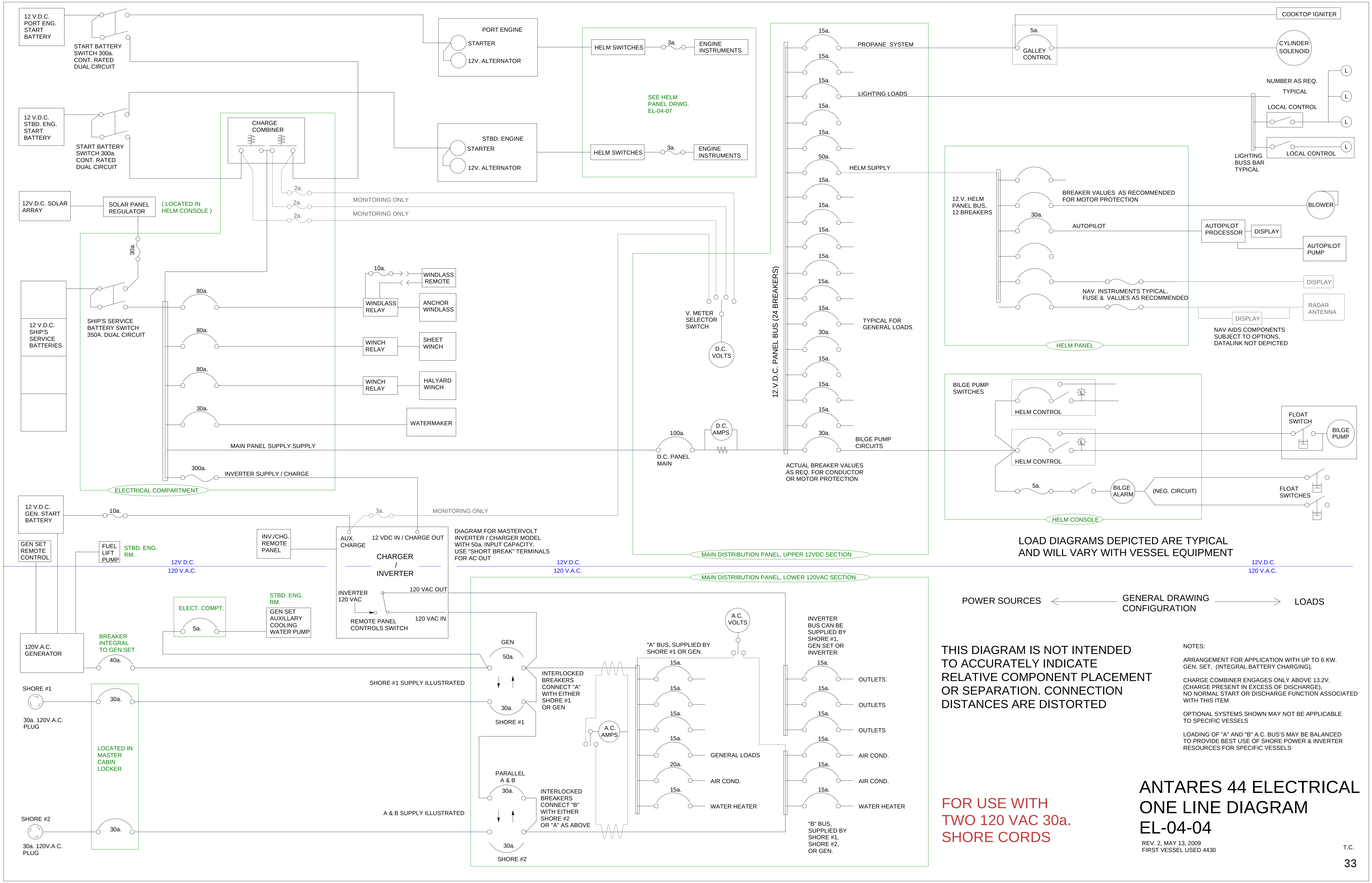


START CIRCUITS - 2 ga.
INVERTER SUPPLY - 2/0 ga., 300a. FUSE
SHIP'S SERVICE SUPPLY - 2/0 ga.
HALYARD WINCH - 4 ga., 70a. BREAKER
SHEET WINCH - 4 ga., 70a. BREAKER
WINDLASS - 4 ga., 80a. BREAKER
BATT. COMBINER CIRCUITS - 4 ga.
PANEL SUPPLY - 4 ga.
SOLAR PANEL FEED - 10 ga.
VOLTMETER SENSE - 14 ga.
NEGATIVE CABLES - ga. AS ABOVE
MAST CIRCUIT NEG. CABLE, 8ga. (310)

ANTARES 44 ELECTRICAL
12V. SUPPLY DISTRIBUTION
EL-04-03

REV. I, MAY 13, 2009
FIRST VESSEL USED 4431

T.C.


12 V.D.C. PORT ENG. START BATTERY
START BATTERY SWITCH 300a. CONT. RATED DUAL CIRCUIT
12 V.D.C. STBD. ENG. START BATTERY
START BATTERY SWITCH 300a. CONT. RATED DUAL CIRCUIT
PORT ENGINE
STARTER
12V. ALTERNATOR
STBD. ENGINE
STARTER
12V. ALTERNATOR
HELM SWITCHES
3a.
ENGINE INSTRUMENTS
SEE HELM PANEL DRWG. EL-04-07
CHARGE COMBINER
12V.D.C. SOLAR ARRAY
SOLAR PANEL REGULATOR
(LOCATED IN HELM CONSOLE)
2a.
MONITORING ONLY
30a.
12 V.D.C. SHIP'S SERVICE BATTERIES
SHIP'S SERVICE BATTERY SWITCH 350A. DUAL CIRCUIT
80a.
10a.
WINDLASS REMOTE
WINDLASS RELAY
ANCHOR WINDLASS
WINCH RELAY
SHEET WINCH
HALYARD WINCH
WATERMAKER
MAIN PANEL SUPPLY SUPPLY
300a.
INVERTER SUPPLY / CHARGE
ELECTRICAL COMPARTMENT
V. METER SELECTOR SWITCH
D.C. VOLTS
100a.
D.C. AMPS
D.C. PANEL MAIN
12.V.D.C. PANEL BUS (24 BREAKERS)
15a.
50a.
PROPANE SYSTEM
LIGHTING LOADS
HELM SUPPLY
TYPICAL FOR GENERAL LOADS
BILGE PUMP CIRCUITS
ACTUAL BREAKER VALUES AS REQ. FOR CONDUCTOR OR MOTOR PROTECTION
MAIN DISTRIBUTION PANEL, UPPER 12VDC SECTION
COOKTOP IGNITER
5a.
GALLEY CONTROL
CYLINDER SOLENOID
NUMBER AS REQ.
TYPICAL
LOCAL CONTROL
LIGHTING BUSS BAR TYPICAL
L
12.V. HELM PANEL BUS, 12 BREAKERS
BREAKER VALUES AS RECOMMENDED FOR MOTOR PROTECTION
BLOWER
AUTOPILOT
AUTOPILOT PROCESSOR
DISPLAY
AUTOPILOT PUMP
NAV. INSTRUMENTS TYPICAL, FUSE & VALUES AS RECOMMENDED
RADAR ANTENNA
NAV AIDS COMPONENTS SUBJECT TO OPTIONS, DATALINK NOT DEPICTED
HELM PANEL
BILGE PUMP SWITCHES
HELM CONTROL
FLOAT SWITCH
BILGE PUMP
BILGE ALARM
(NEG. CIRCUIT)
FLOAT SWITCHES
HELM CONSOLE
LOAD DIAGRAMS DEPICTED ARE TYPICAL AND WILL VARY WITH VESSEL EQUIPMENT
12 V.D.C. GEN. START BATTERY
GEN SET REMOTE CONTROL
FUEL LIFT PUMP
STBD. ENG. RM.
INV./CHG. REMOTE PANEL
AUX. CHARGE
12 VDC IN / CHARGE OUT
CHARGER / INVERTER
DIAGRAM FOR MASTERVOLT INVERTER / CHARGER MODEL WITH 50a. INPUT CAPACITY. USE "SHORT BREAK" TERMINALS FOR AC OUT
12V.D.C.
120 V.A.C.
INVERTER 120 VAC
120 VAC OUT
120 VAC IN
REMOTE PANEL CONTROLS SWITCH
MAIN DISTRIBUTION PANEL, LOWER 120VAC SECTION
ELECT. COMPT.
STBD. ENG. RM.
GEN SET AUXILLARY COOLING WATER PUMP
120V.A.C. GENERATOR
BREAKER INTEGRAL TO GEN SET
40a.
SHORE #1
30a. 120V.A.C. PLUG
LOCATED IN MASTER CABIN LOCKER
SHORE #2
SHORE #1 SUPPLY ILLUSTRATED
A & B SUPPLY ILLUSTRATED
GEN
SHORE #1
PARALLEL A & B
SHORE #2
INTERLOCKED BREAKERS CONNECT "A" WITH EITHER SHORE #1 OR GEN
INTERLOCKED BREAKERS CONNECT "B" WITH EITHER SHORE #2 OR "A" AS ABOVE
A.C. AMPS
A.C. VOLTS
"A" BUS, SUPPLIED BY SHORE #1 OR GEN.
20a.
GENERAL LOADS
AIR COND.
WATER HEATER
INVERTER BUS CAN BE SUPPLIED BY SHORE #1, GEN SET OR INVERTER
OUTLETS
"B" BUS, SUPPLIED BY SHORE #1, SHORE #2, OR GEN.
POWER SOURCES
GENERAL DRAWING CONFIGURATION
LOADS
THIS DIAGRAM IS NOT INTENDED TO ACCURATELY INDICATE RELATIVE COMPONENT PLACEMENT OR SEPARATION. CONNECTION DISTANCES ARE DISTORTED
NOTES:
ARRANGEMENT FOR APPLICATION WITH UP TO 6 KW. GEN. SET, (INTEGRAL BATTERY CHARGING),
CHARGE COMBINER ENGAGES ONLY ABOVE 13.2V. (CHARGE PRESENT IN EXCESS OF DISCHARGE), NO NORMAL START OR DISCHARGE FUNCTION ASSOCIATED WITH THIS ITEM
OPTIONAL SYSTEMS SHOWN MAY NOT BE APPLICABLE TO SPECIFIC VESSELS
LOADING OF "A" AND "B" A.C. BUS'S MAY BE BALANCED TO PROVIDE BEST USE OF SHORE POWER & INVERTER RESOURCES FOR SPECIFIC VESSELS
FOR USE WITH TWO 120 VAC 30a. SHORE CORDS
ANTARES 44 ELECTRICAL ONE LINE DIAGRAM
EL-04-04
REV. 2, MAY 13, 2009
FIRST VESSEL USED 4430
T.C.

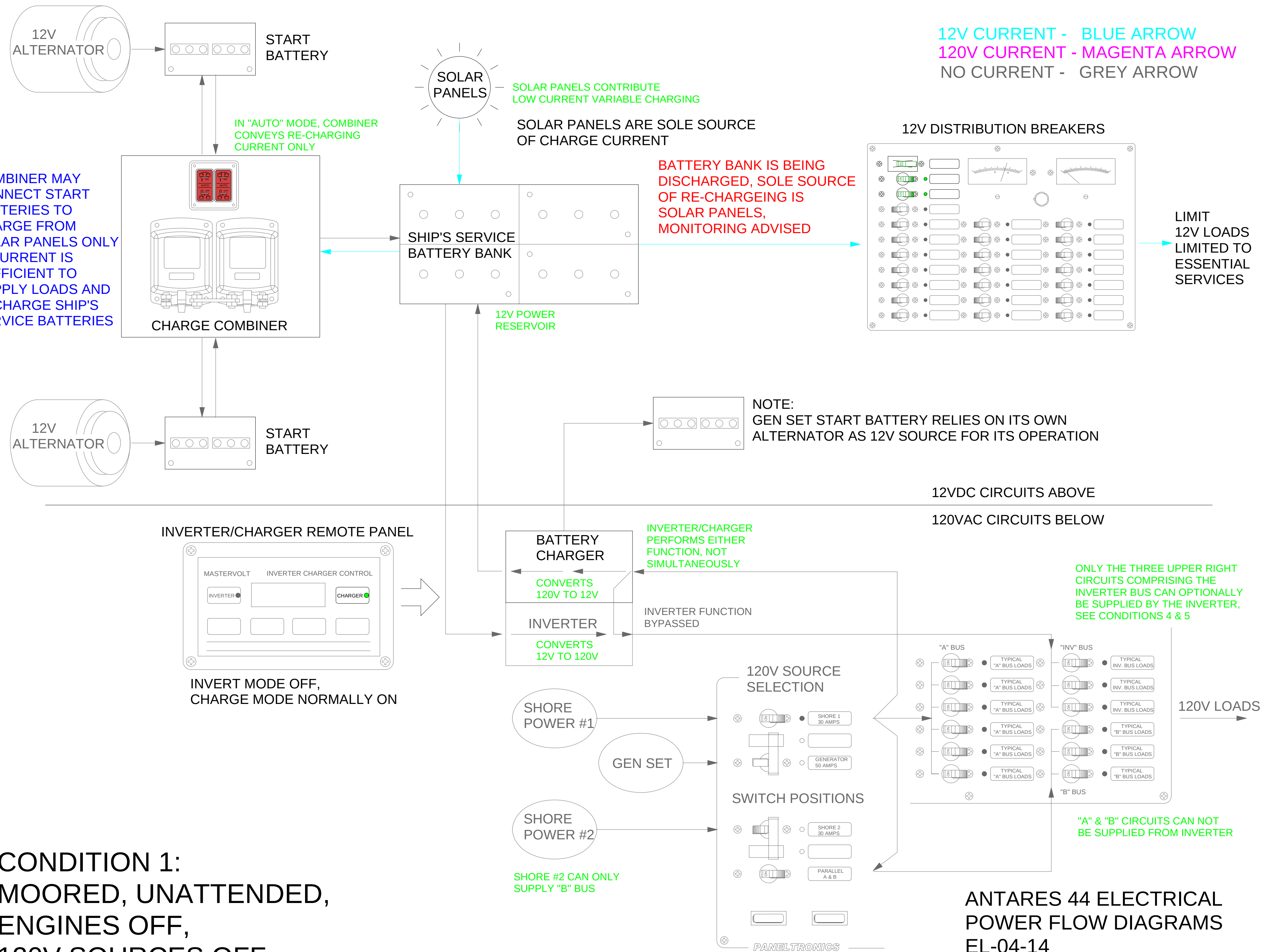
TYPICAL APPLICATION	ENGINES RUNNING	GEN SET RUNNING	SHORE #1 CONNECTED	SHORE #2 CONNECTED	INVERTER ON	CHARGE COMBINER	CONDITION DIAGRAM #
MOORED	OFF	OFF	OFF	OFF	OFF	AUTO	1
SAILING	OFF	OFF	OFF	OFF	OFF	AUTO	2
MOTORING	ON	OFF	OFF	OFF	OFF	AUTO	3
SAILING	OFF	OFF	OFF	OFF	ON	AUTO	4
MOTORING	ON	OFF	OFF	OFF	ON	AUTO	5
SAILING	OFF	ON	OFF	OFF	OFF	AUTO	6
MOTORING	ON	ON	OFF	OFF	OFF	AUTO	7
AT DOCK	OFF	OFF	ON	OFF	OFF	AUTO	8
AT DOCK	OFF	OFF	ON	ON	OFF	AUTO	9
AT DOCK	ON	OFF	ON	ON	OFF	AUTO	10
AT DOCK	ON	ON	OFF	ON	OFF	AUTO	11
AT SEA	ONE	OFF	OFF	OFF	OFF	AUTO	12
CAUTION SERVICING	ON OR OFF	ON OR OFF	ON OR OFF	ON OR OFF	OFF	OFF	13
EMERGENCY ONLY	ON OR OFF	ON OR OFF	ON OR OFF	ON OR OFF	OFF	MOMENTARY FORCED ON	14

KEY CHART FOR USE WITH 14 CONDITION DIAGRAMS

NOTES:
1) GEN SET 12VDC SYSTEM IS "STAND ALONE" AND SELF-TENDING
2) ENGAGING GEN SET WITH CHARGE COMBINER ON WILL EXPEDITIOUSLY RESOLVE MOST LOW BATTERY PROBLEMS
3) USE WITH ONE LINE ELECTRICAL DIAGRAM EL-04-04 TO IDENTIFY ALL CIRCUIT SWITCHES AND PROTECTION
4) ALTERNATORS ARE ON WHEN ENGINES ARE RUNNING

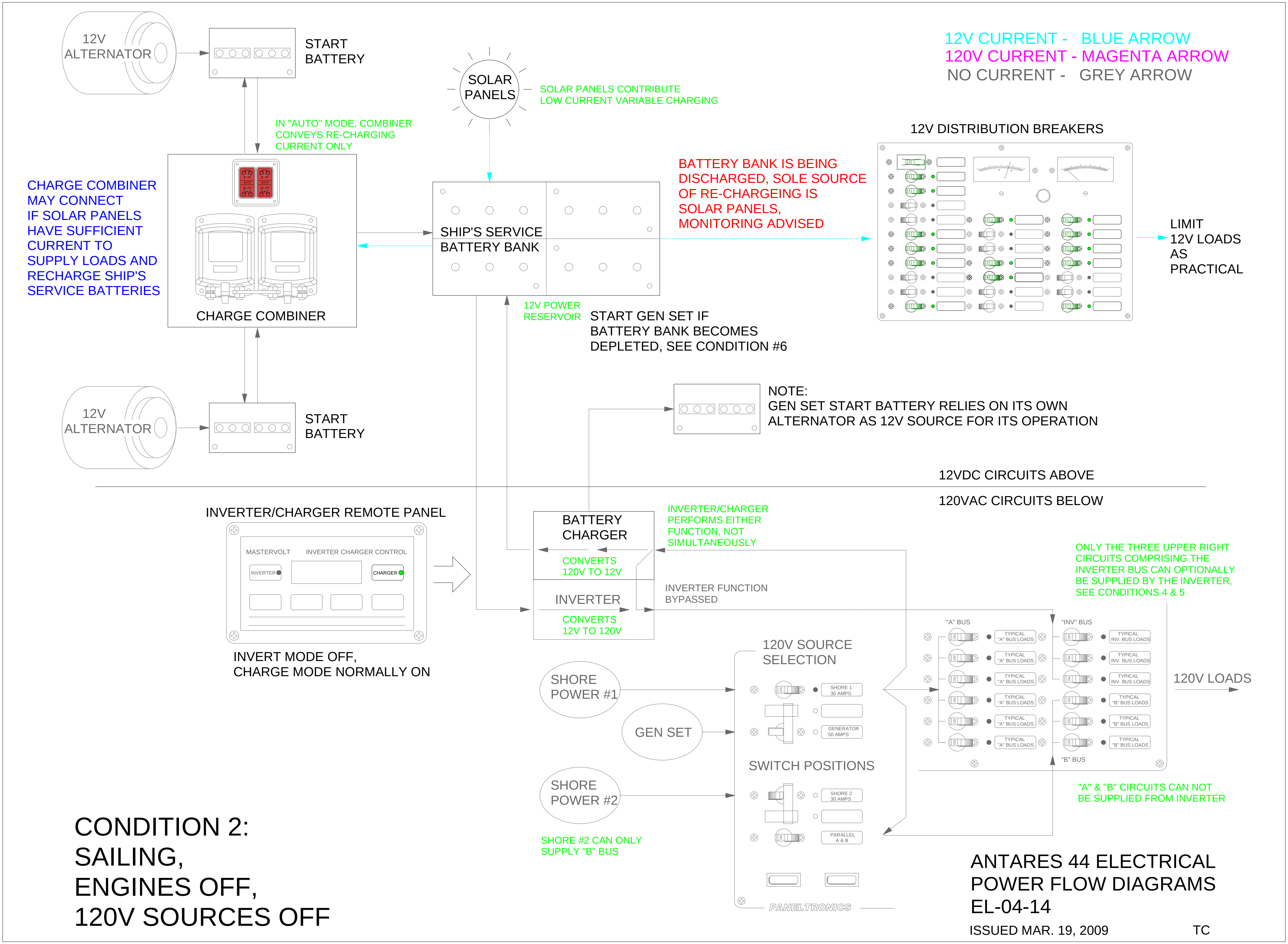
ANTARES 44 ELECTRICAL POWER FLOW DIAGRAMS EL-04-14

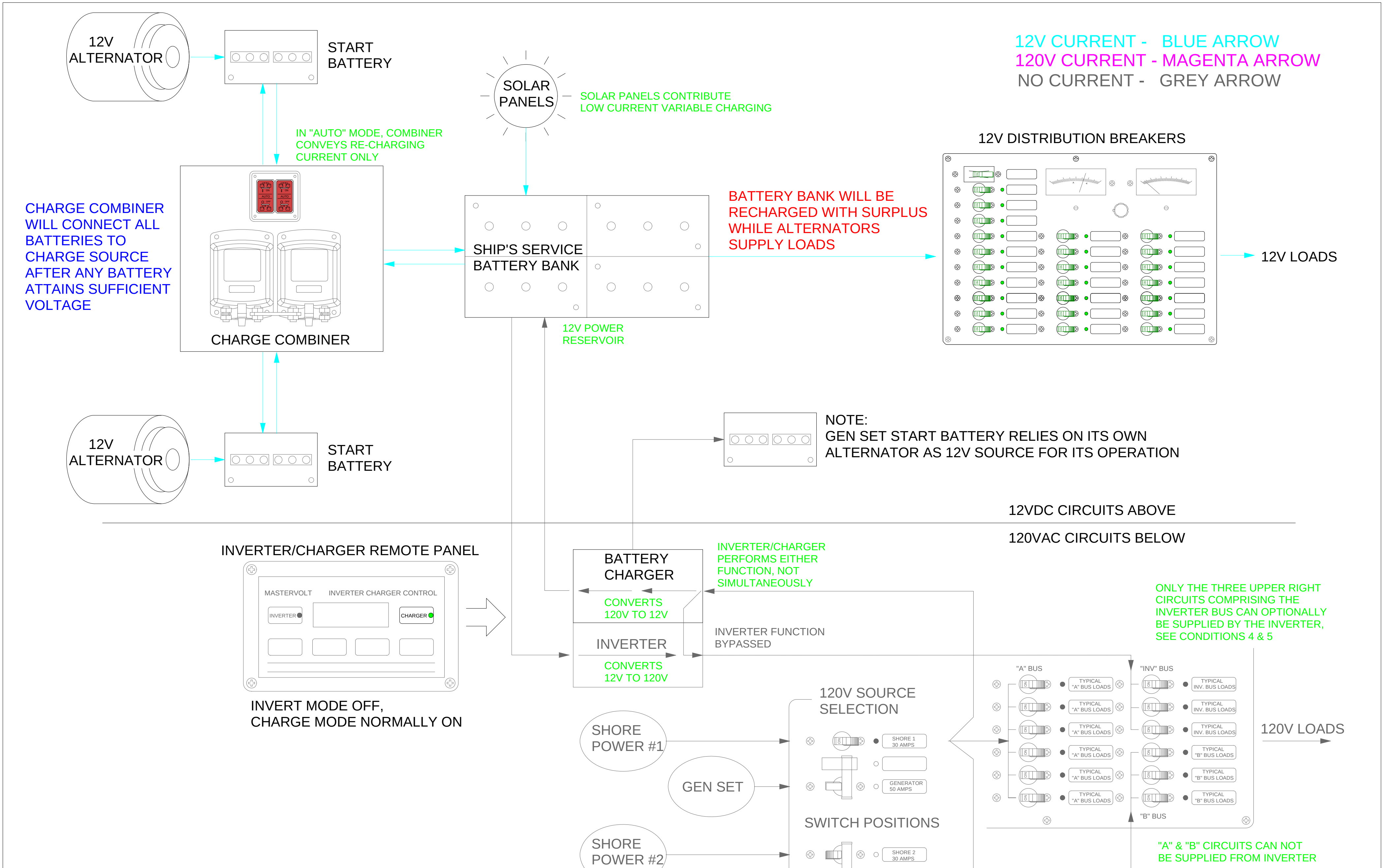
ISSUED MAR. 19, 2009 TC



CONDITION 1:
MOORED, UNATTENDED, ENGINES OFF, 120V SOURCES OFF

ANTARES 44 ELECTRICAL POWER FLOW DIAGRAMS
EL-04-14
ISSUED MAR. 19, 2009 TC

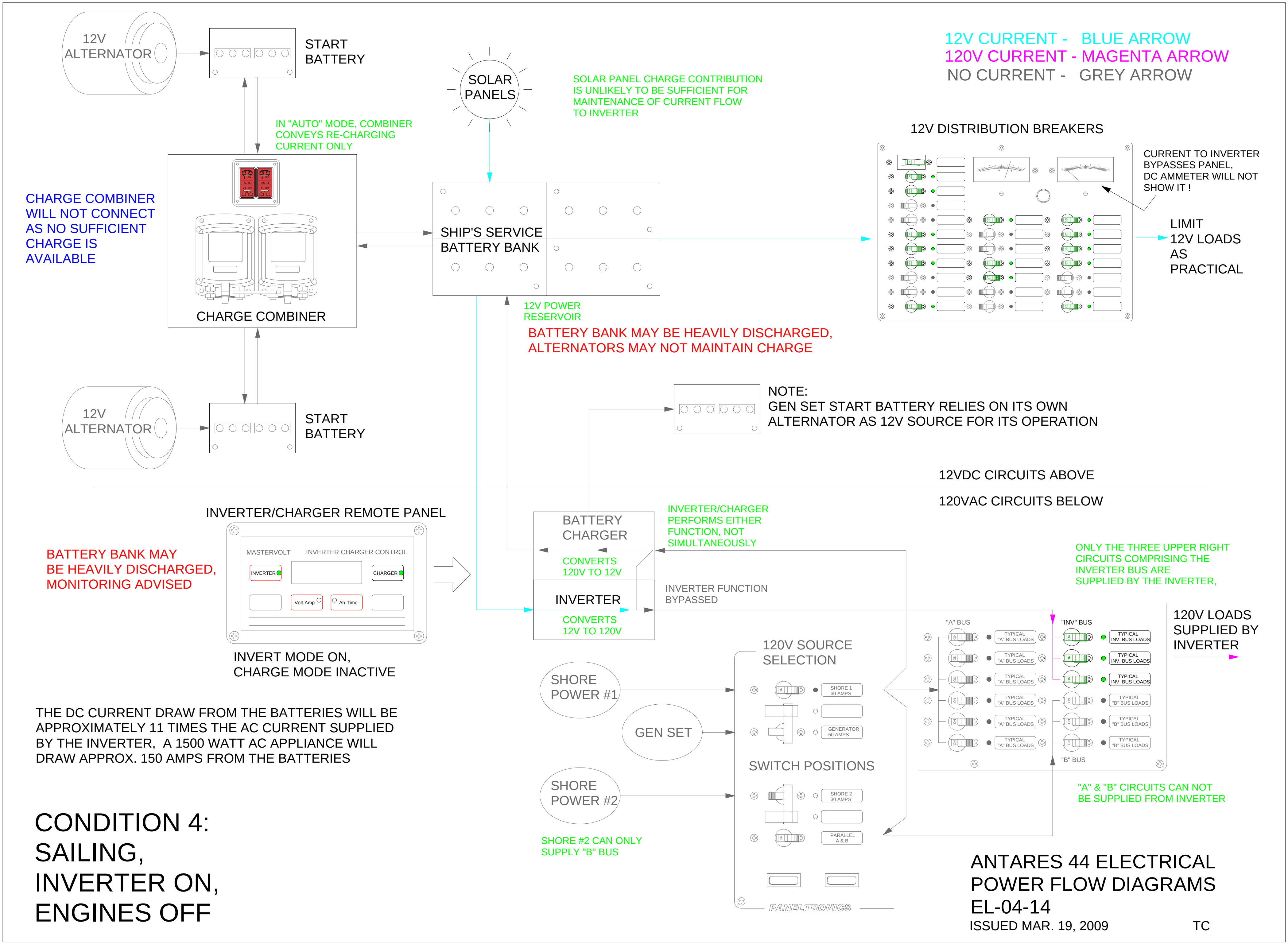

12V CURRENT - BLUE ARROW
120V CURRENT - MAGENTA ARROW
NO CURRENT - GREY ARROW
12V ALTERNATOR
START BATTERY
SOLAR PANELS
SOLAR PANELS CONTRIBUTE LOW CURRENT VARIABLE CHARGING
IN "AUTO" MODE, COMBINER CONVEYS RE-CHARGING CURRENT ONLY
CHARGE COMBINER MAY CONNECT IF SOLAR PANELS HAVE SUFFICIENT CURRENT TO SUPPLY LOADS AND RECHARGE SHIP'S SERVICE BATTERIES
CHARGE COMBINER
SHIP'S SERVICE BATTERY BANK
12V DISTRIBUTION BREAKERS
BATTERY BANK IS BEING DISCHARGED, SOLE SOURCE OF RE-CHARGEING IS SOLAR PANELS, MONITORING ADVISED
LIMIT 12V LOADS AS PRACTICAL
12V POWER RESERVOIR
START GEN SET IF BATTERY BANK BECOMES DEPLETED, SEE CONDITION #6
12V ALTERNATOR
START BATTERY
NOTE:
GEN SET START BATTERY RELIES ON ITS OWN ALTERNATOR AS 12V SOURCE FOR ITS OPERATION
12VDC CIRCUITS ABOVE
120VAC CIRCUITS BELOW
INVERTER/CHARGER REMOTE PANEL
MASTERVOLT
INVERTER CHARGER CONTROL
INVERTER
CHARGER
INVERT MODE OFF, CHARGE MODE NORMALLY ON
BATTERY CHARGER
CONVERTS 120V TO 12V
INVERTER
CONVERTS 12V TO 120V
INVERTER/CHARGER PERFORMS EITHER FUNCTION, NOT SIMULTANEOUSLY
INVERTER FUNCTION BYPASSED
ONLY THE THREE UPPER RIGHT CIRCUITS COMPRISING THE INVERTER BUS CAN OPTIONALLY BE SUPPLIED BY THE INVERTER, SEE CONDITIONS 4 & 5
"A" BUS
"INV" BUS
"B" BUS
TYPICAL "A" BUS LOADS
TYPICAL INV. BUS LOADS
TYPICAL "B" BUS LOADS
120V LOADS
"A" & "B" CIRCUITS CAN NOT BE SUPPLIED FROM INVERTER
120V SOURCE SELECTION
SHORE POWER #1
GEN SET
SHORE POWER #2
SHORE 1 30 AMPS
GENERATOR 50 AMPS
SWITCH POSITIONS
SHORE 2 30 AMPS
PARALLEL A & B
PANELTRONICS
SHORE #2 CAN ONLY SUPPLY "B" BUS
CONDITION 2:
SAILING,
ENGINES OFF,
120V SOURCES OFF
ANTARES 44 ELECTRICAL
POWER FLOW DIAGRAMS
EL-04-14
ISSUED MAR. 19, 2009
TC

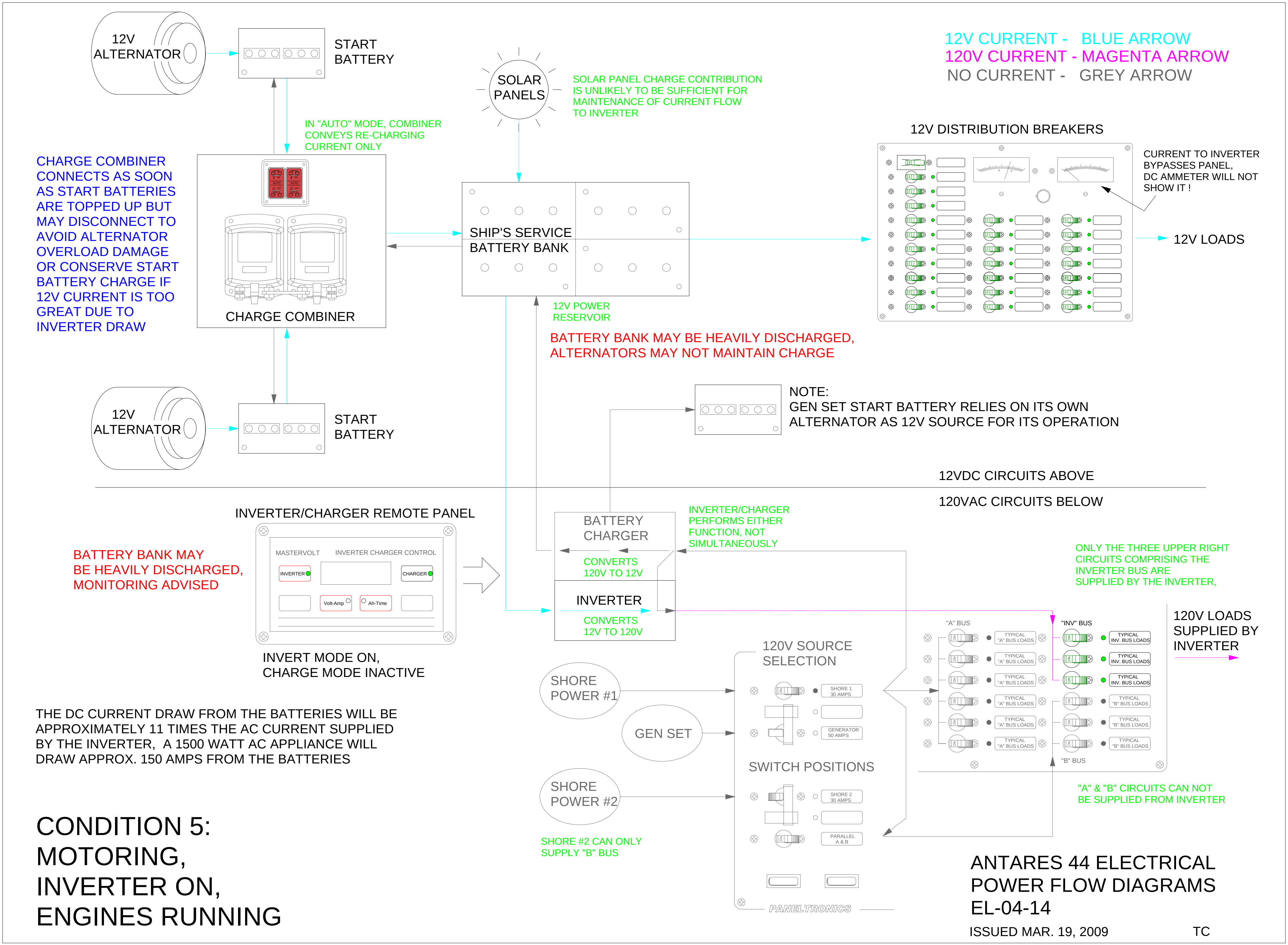


CONDITION 3: MOTORING, ENGINES RUNNING, 120V SOURCES OFF

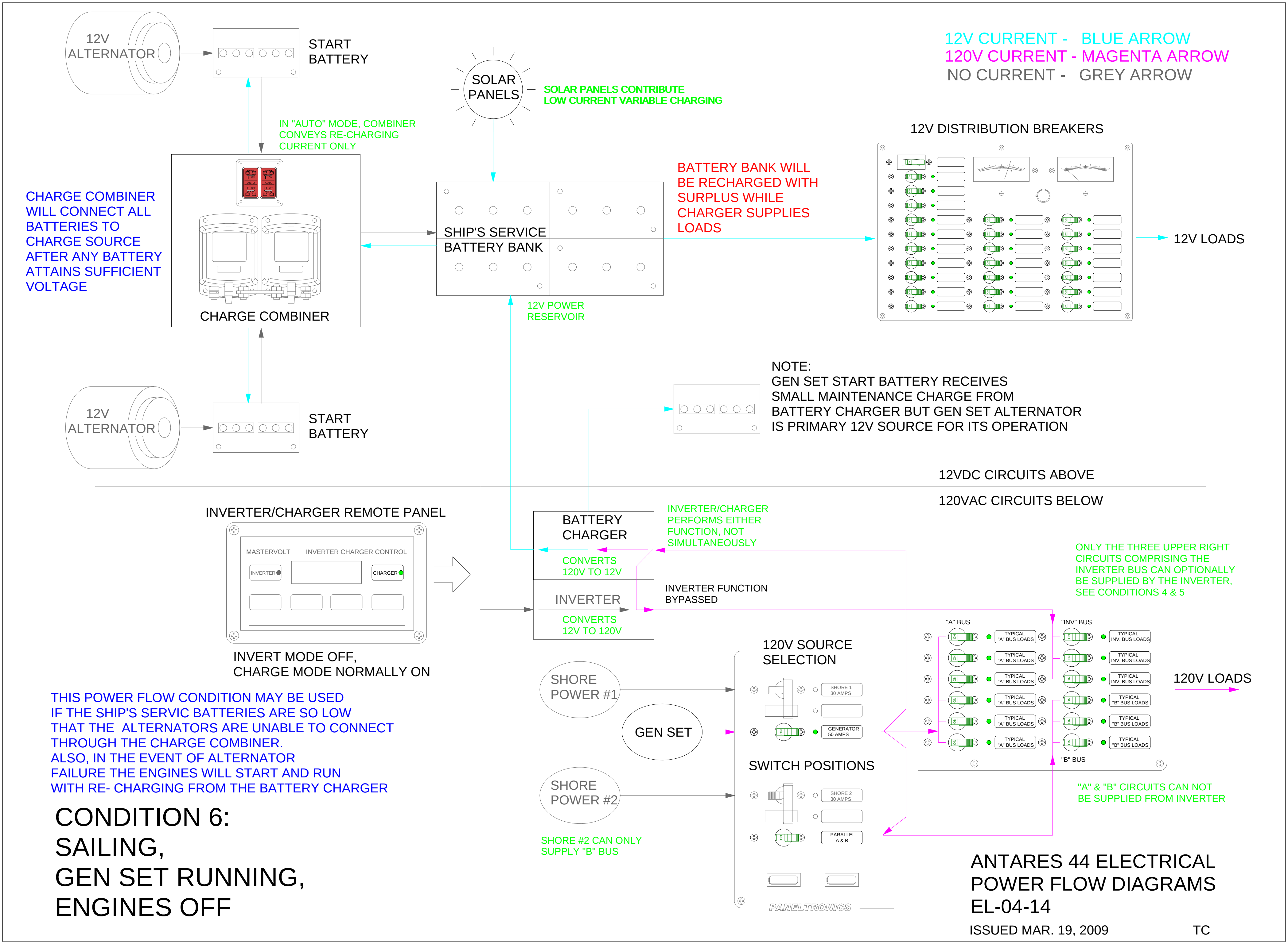
ANTARES 44 ELECTRICAL POWER FLOW DIAGRAMS
EL-04-14

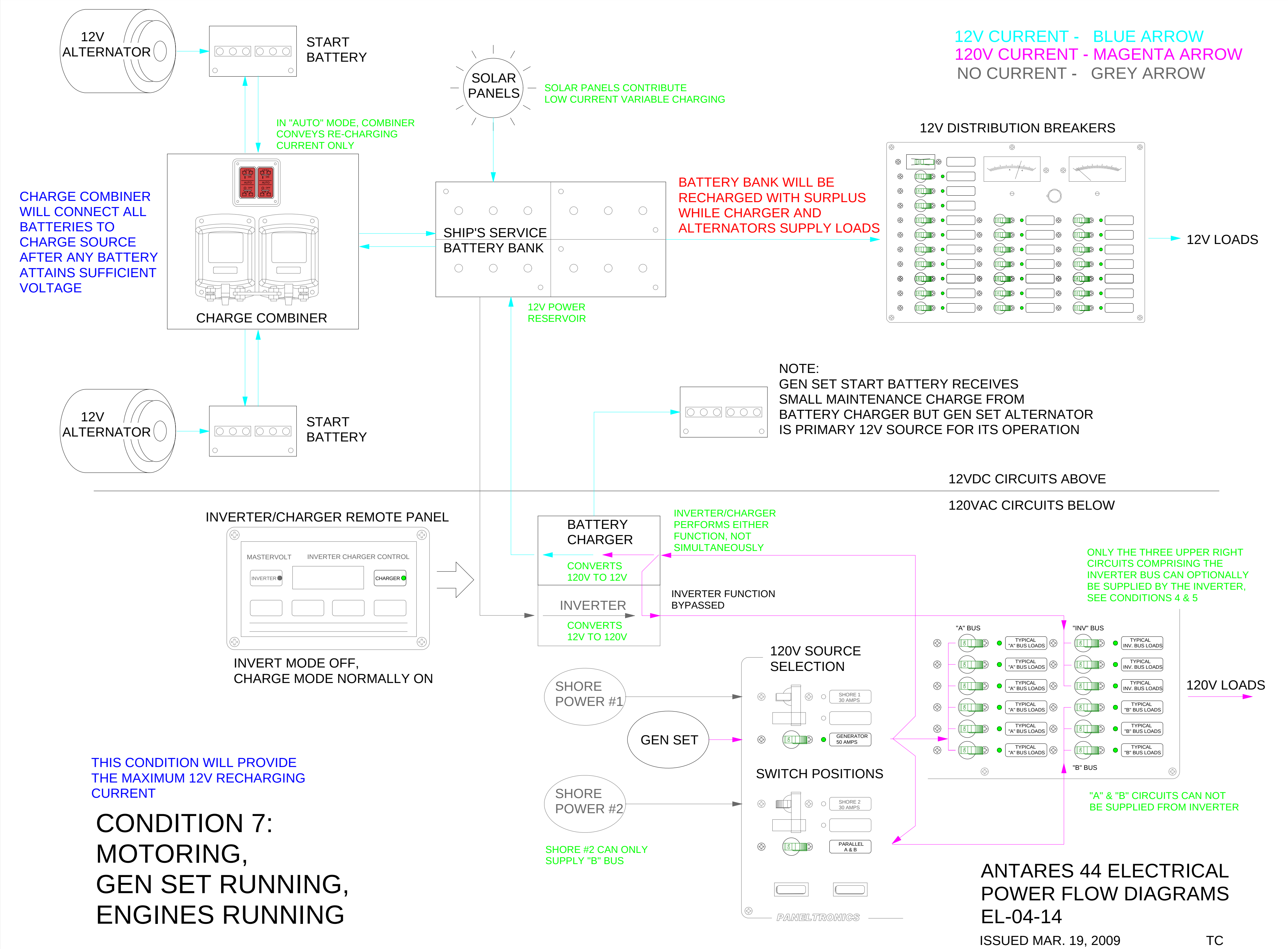
ISSUED MAR. 19, 2009 TC


12V ALTERNATOR
START BATTERY
SOLAR PANELS
12V CURRENT - BLUE ARROW
120V CURRENT - MAGENTA ARROW
NO CURRENT - GREY ARROW
SOLAR PANEL CHARGE CONTRIBUTION IS UNLIKELY TO BE SUFFICIENT FOR MAINTENANCE OF CURRENT FLOW TO INVERTER
IN "AUTO" MODE, COMBINER CONVEYS RE-CHARGING CURRENT ONLY
12V DISTRIBUTION BREAKERS
CURRENT TO INVERTER BYPASSES PANEL, DC AMMETER WILL NOT SHOW IT !
CHARGE COMBINER WILL NOT CONNECT AS NO SUFFICIENT CHARGE IS AVAILABLE
SHIP'S SERVICE BATTERY BANK
LIMIT 12V LOADS AS PRACTICAL
CHARGE COMBINER
12V POWER RESERVOIR
BATTERY BANK MAY BE HEAVILY DISCHARGED, ALTERNATORS MAY NOT MAINTAIN CHARGE
12V ALTERNATOR
START BATTERY
NOTE:
GEN SET START BATTERY RELIES ON ITS OWN ALTERNATOR AS 12V SOURCE FOR ITS OPERATION
12VDC CIRCUITS ABOVE
120VAC CIRCUITS BELOW
INVERTER/CHARGER REMOTE PANEL
MASTERVOLT
INVERTER CHARGER CONTROL
INVERTER
CHARGER
Volt-Amp
Ah-Time
BATTERY CHARGER
CONVERTS 120V TO 12V
INVERTER/CHARGER PERFORMS EITHER FUNCTION, NOT SIMULTANEOUSLY
ONLY THE THREE UPPER RIGHT CIRCUITS COMPRISING THE INVERTER BUS ARE SUPPLIED BY THE INVERTER,
BATTERY BANK MAY BE HEAVILY DISCHARGED, MONITORING ADVISED
INVERTER
CONVERTS 12V TO 120V
INVERTER FUNCTION BYPASSED
"A" BUS
"INV" BUS
TYPICAL "A" BUS LOADS
TYPICAL INV. BUS LOADS
TYPICAL "B" BUS LOADS
"B" BUS
120V LOADS SUPPLIED BY INVERTER
INVERT MODE ON, CHARGE MODE INACTIVE
120V SOURCE SELECTION
SHORE POWER #1
SHORE 1 30 AMPS
GEN SET
GENERATOR 50 AMPS
THE DC CURRENT DRAW FROM THE BATTERIES WILL BE APPROXIMATELY 11 TIMES THE AC CURRENT SUPPLIED BY THE INVERTER, A 1500 WATT AC APPLIANCE WILL DRAW APPROX. 150 AMPS FROM THE BATTERIES
SWITCH POSITIONS
SHORE POWER #2
SHORE 2 30 AMPS
PARALLEL A & B
"A" & "B" CIRCUITS CAN NOT BE SUPPLIED FROM INVERTER
SHORE #2 CAN ONLY SUPPLY "B" BUS
PANELTRONICS
CONDITION 4: SAILING, INVERTER ON, ENGINES OFF
ANTARES 44 ELECTRICAL POWER FLOW DIAGRAMS
EL-04-14
ISSUED MAR. 19, 2009
TC



12V CURRENT - BLUE ARROW
120V CURRENT - MAGENTA ARROW
NO CURRENT - GREY ARROW
12V ALTERNATOR
START BATTERY
SOLAR PANELS
SOLAR PANEL CHARGE CONTRIBUTION IS UNLIKELY TO BE SUFFICIENT FOR MAINTENANCE OF CURRENT FLOW TO INVERTER
IN "AUTO" MODE, COMBINER CONVEYS RE-CHARGING CURRENT ONLY
CHARGE COMBINER CONNECTS AS SOON AS START BATTERIES ARE TOPPED UP BUT MAY DISCONNECT TO AVOID ALTERNATOR OVERLOAD DAMAGE OR CONSERVE START BATTERY CHARGE IF 12V CURRENT IS TOO GREAT DUE TO INVERTER DRAW
CHARGE COMBINER
SHIP'S SERVICE BATTERY BANK
12V POWER RESERVOIR
BATTERY BANK MAY BE HEAVILY DISCHARGED, ALTERNATORS MAY NOT MAINTAIN CHARGE
12V DISTRIBUTION BREAKERS
CURRENT TO INVERTER BYPASSES PANEL, DC AMMETER WILL NOT SHOW IT !
12V LOADS
12V ALTERNATOR
START BATTERY
NOTE:
GEN SET START BATTERY RELIES ON ITS OWN ALTERNATOR AS 12V SOURCE FOR ITS OPERATION
12VDC CIRCUITS ABOVE
120VAC CIRCUITS BELOW
INVERTER/CHARGER REMOTE PANEL
MASTERVOLT
INVERTER CHARGER CONTROL
INVERTER
CHARGER
Volt-Amp
Ah-Time
BATTERY BANK MAY BE HEAVILY DISCHARGED, MONITORING ADVISED
INVERT MODE ON, CHARGE MODE INACTIVE
BATTERY CHARGER
CONVERTS 120V TO 12V
INVERTER
CONVERTS 12V TO 120V
INVERTER/CHARGER PERFORMS EITHER FUNCTION, NOT SIMULTANEOUSLY
ONLY THE THREE UPPER RIGHT CIRCUITS COMPRISING THE INVERTER BUS ARE SUPPLIED BY THE INVERTER,
"A" BUS
"INV" BUS
"B" BUS
TYPICAL "A" BUS LOADS
TYPICAL INV. BUS LOADS
TYPICAL "B" BUS LOADS
120V LOADS SUPPLIED BY INVERTER
120V SOURCE SELECTION
SHORE POWER #1
GEN SET
SHORE POWER #2
SHORE 1 30 AMPS
GENERATOR 50 AMPS
SWITCH POSITIONS
SHORE 2 30 AMPS
PARALLEL A & B
PANELTRONICS
SHORE #2 CAN ONLY SUPPLY "B" BUS
"A" & "B" CIRCUITS CAN NOT BE SUPPLIED FROM INVERTER
THE DC CURRENT DRAW FROM THE BATTERIES WILL BE APPROXIMATELY 11 TIMES THE AC CURRENT SUPPLIED BY THE INVERTER, A 1500 WATT AC APPLIANCE WILL DRAW APPROX. 150 AMPS FROM THE BATTERIES
CONDITION 5:
MOTORING,
INVERTER ON,
ENGINES RUNNING
ANTARES 44 ELECTRICAL
POWER FLOW DIAGRAMS
EL-04-14
ISSUED MAR. 19, 2009
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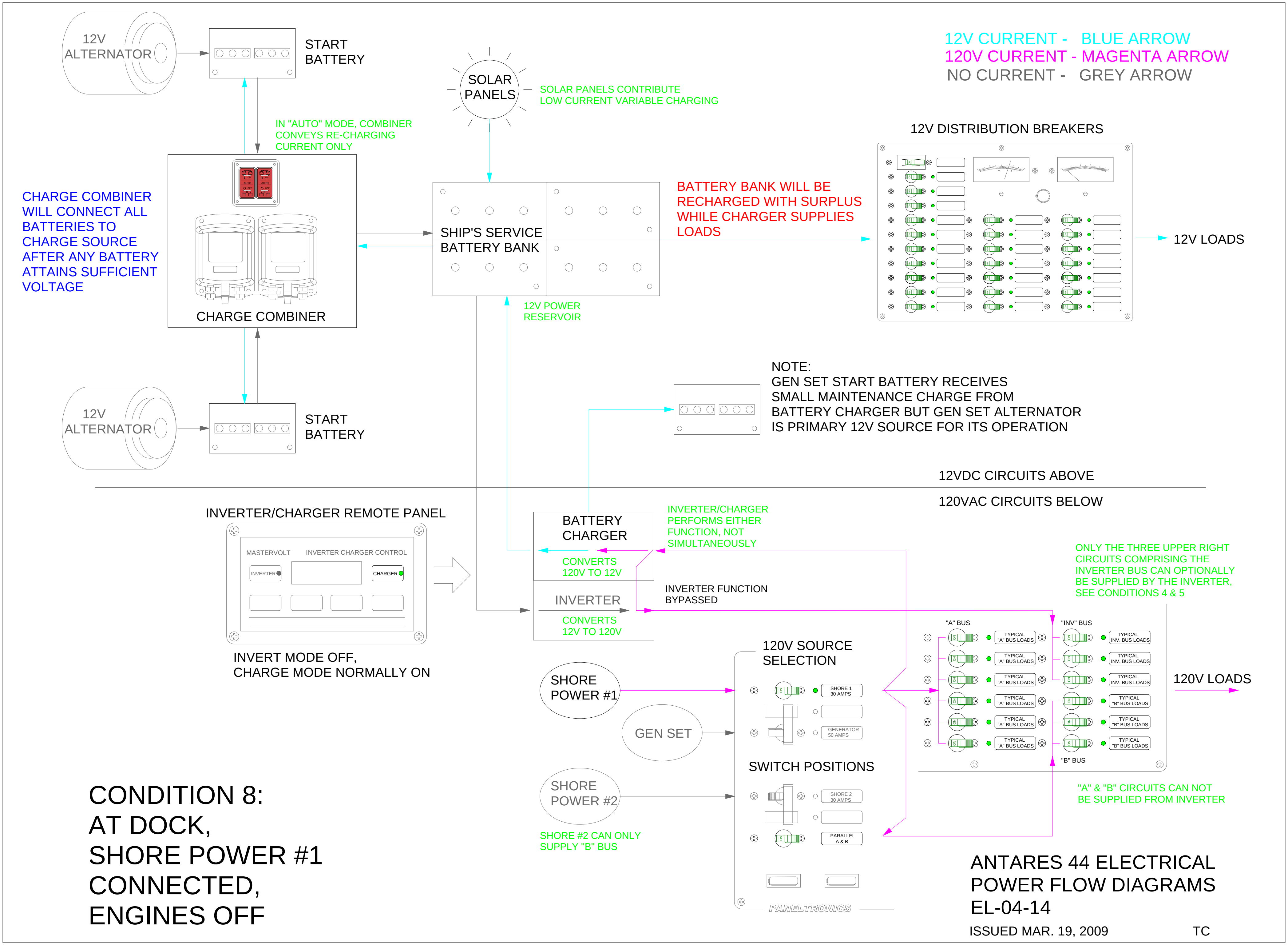

12V CURRENT - BLUE ARROW
120V CURRENT - MAGENTA ARROW
NO CURRENT - GREY ARROW
12V ALTERNATOR
START BATTERY
SOLAR PANELS
SOLAR PANELS CONTRIBUTE LOW CURRENT VARIABLE CHARGING
IN "AUTO" MODE, COMBINER CONVEYS RE-CHARGING CURRENT ONLY
12V DISTRIBUTION BREAKERS
CHARGE COMBINER WILL CONNECT ALL BATTERIES TO CHARGE SOURCE AFTER ANY BATTERY ATTAINS SUFFICIENT VOLTAGE
SHIP'S SERVICE BATTERY BANK
BATTERY BANK WILL BE RECHARGED WITH SURPLUS WHILE CHARGER SUPPLIES LOADS
12V LOADS
CHARGE COMBINER
12V POWER RESERVOIR
12V ALTERNATOR
START BATTERY
NOTE:
GEN SET START BATTERY RECEIVES SMALL MAINTENANCE CHARGE FROM BATTERY CHARGER BUT GEN SET ALTERNATOR IS PRIMARY 12V SOURCE FOR ITS OPERATION
12VDC CIRCUITS ABOVE
120VAC CIRCUITS BELOW
INVERTER/CHARGER REMOTE PANEL
MASTERVOLT
INVERTER CHARGER CONTROL
INVERTER
CHARGER
BATTERY CHARGER
CONVERTS 120V TO 12V
INVERTER/CHARGER PERFORMS EITHER FUNCTION, NOT SIMULTANEOUSLY
INVERTER
CONVERTS 12V TO 120V
INVERTER FUNCTION BYPASSED
ONLY THE THREE UPPER RIGHT CIRCUITS COMPRISING THE INVERTER BUS CAN OPTIONALLY BE SUPPLIED BY THE INVERTER, SEE CONDITIONS 4 & 5
"A" BUS
"INV" BUS
"B" BUS
TYPICAL "A" BUS LOADS
TYPICAL INV. BUS LOADS
TYPICAL "B" BUS LOADS
120V LOADS
INVERT MODE OFF,
CHARGE MODE NORMALLY ON
120V SOURCE SELECTION
SHORE POWER #1
SHORE 1 30 AMPS
GEN SET
GENERATOR 50 AMPS
SWITCH POSITIONS
SHORE POWER #2
SHORE 2 30 AMPS
PARALLEL A & B
PANELTRONICS
"A" & "B" CIRCUITS CAN NOT BE SUPPLIED FROM INVERTER
SHORE #2 CAN ONLY SUPPLY "B" BUS
THIS POWER FLOW CONDITION MAY BE USED IF THE SHIP'S SERVIC BATTERIES ARE SO LOW THAT THE ALTERNATORS ARE UNABLE TO CONNECT THROUGH THE CHARGE COMBINER.
ALSO, IN THE EVENT OF ALTERNATOR FAILURE THE ENGINES WILL START AND RUN WITH RE- CHARGING FROM THE BATTERY CHARGER
CONDITION 6:
SAILING,
GEN SET RUNNING,
ENGINES OFF
ANTARES 44 ELECTRICAL
POWER FLOW DIAGRAMS
EL-04-14
ISSUED MAR. 19, 2009
TC



CONDITION 7:
MOTORING,
GEN SET RUNNING,
ENGINES RUNNING

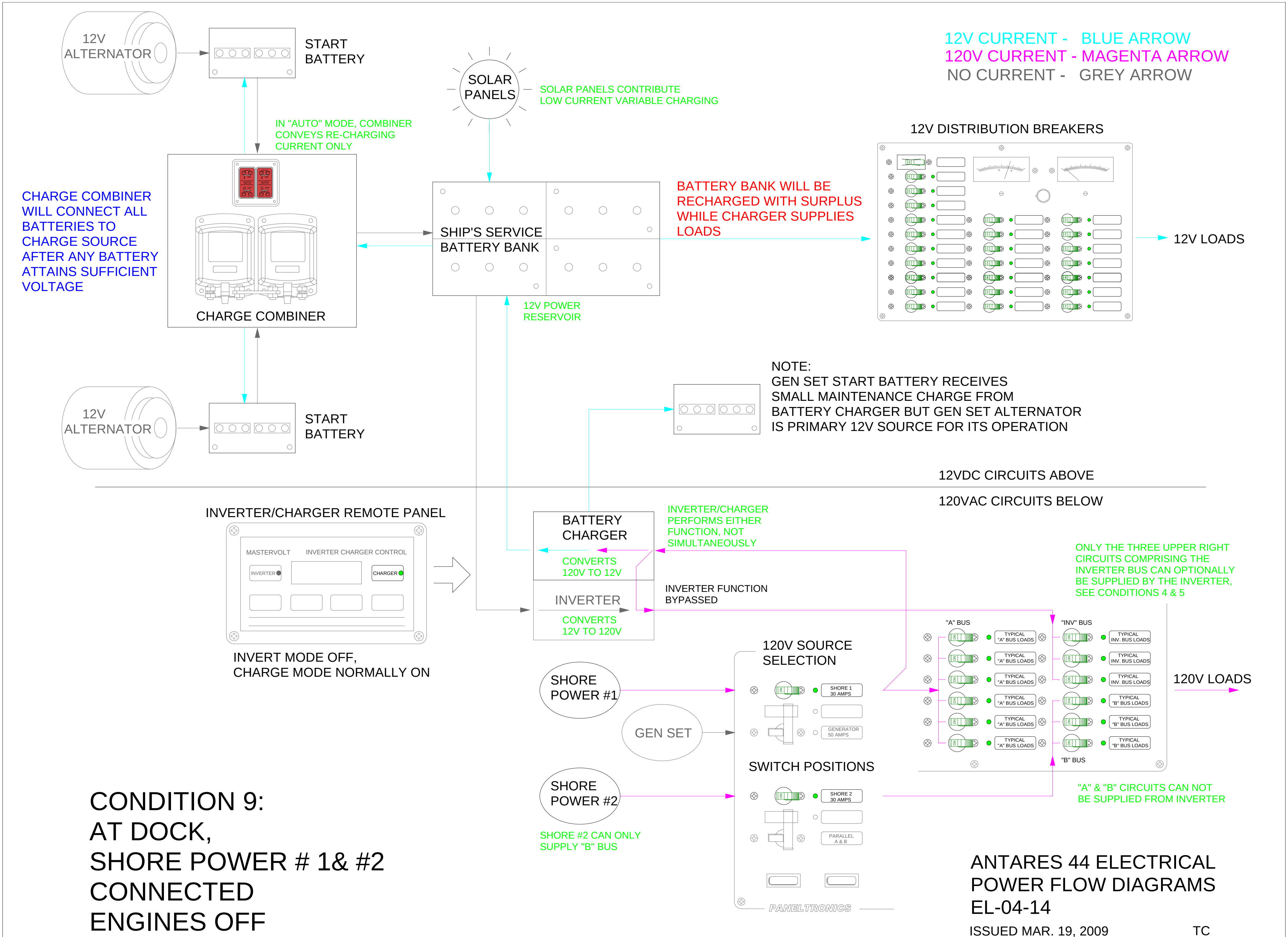
ANTARES 44 ELECTRICAL POWER FLOW DIAGRAMS
EL-04-14

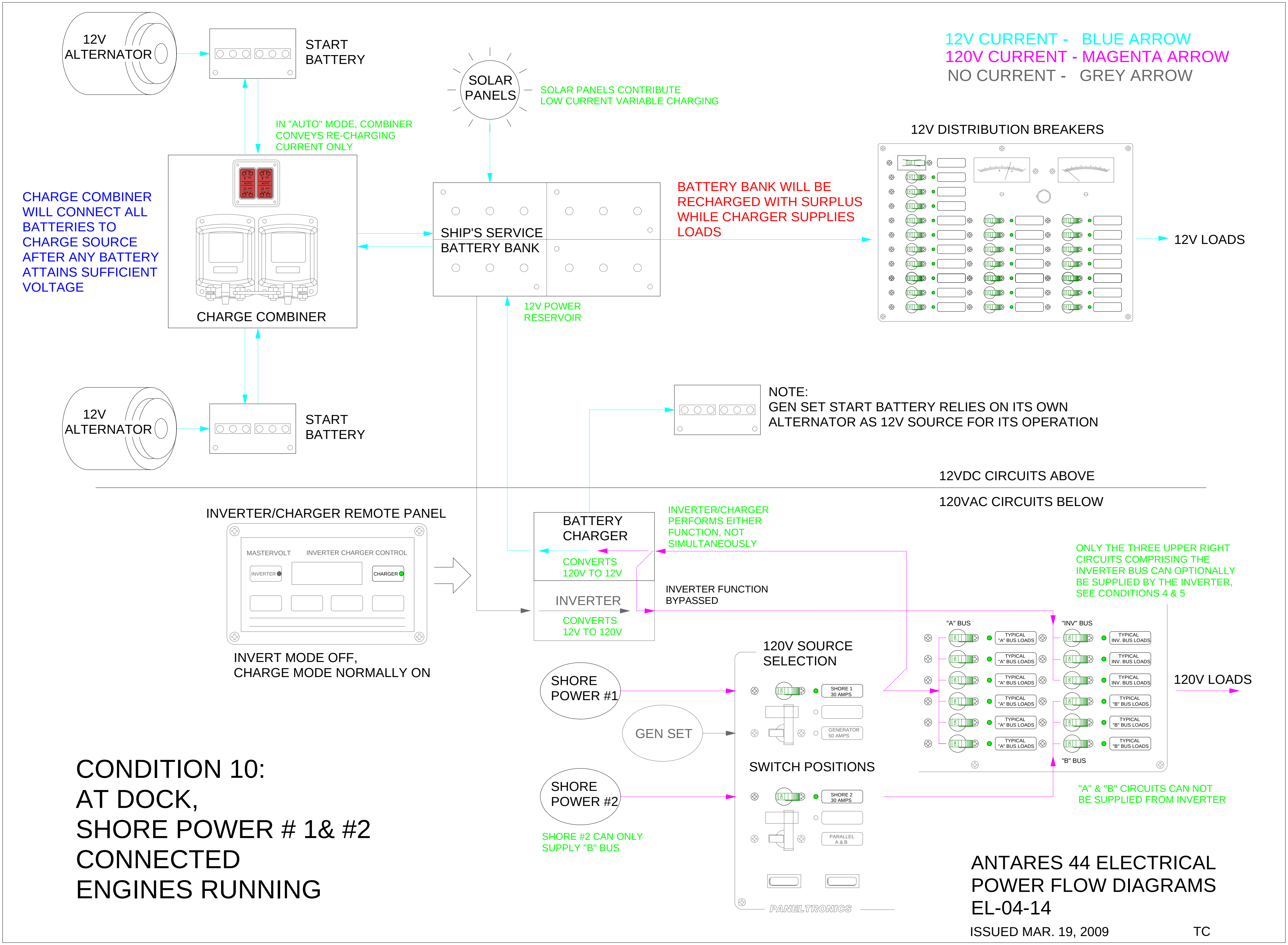
ISSUED MAR. 19, 2009 TC



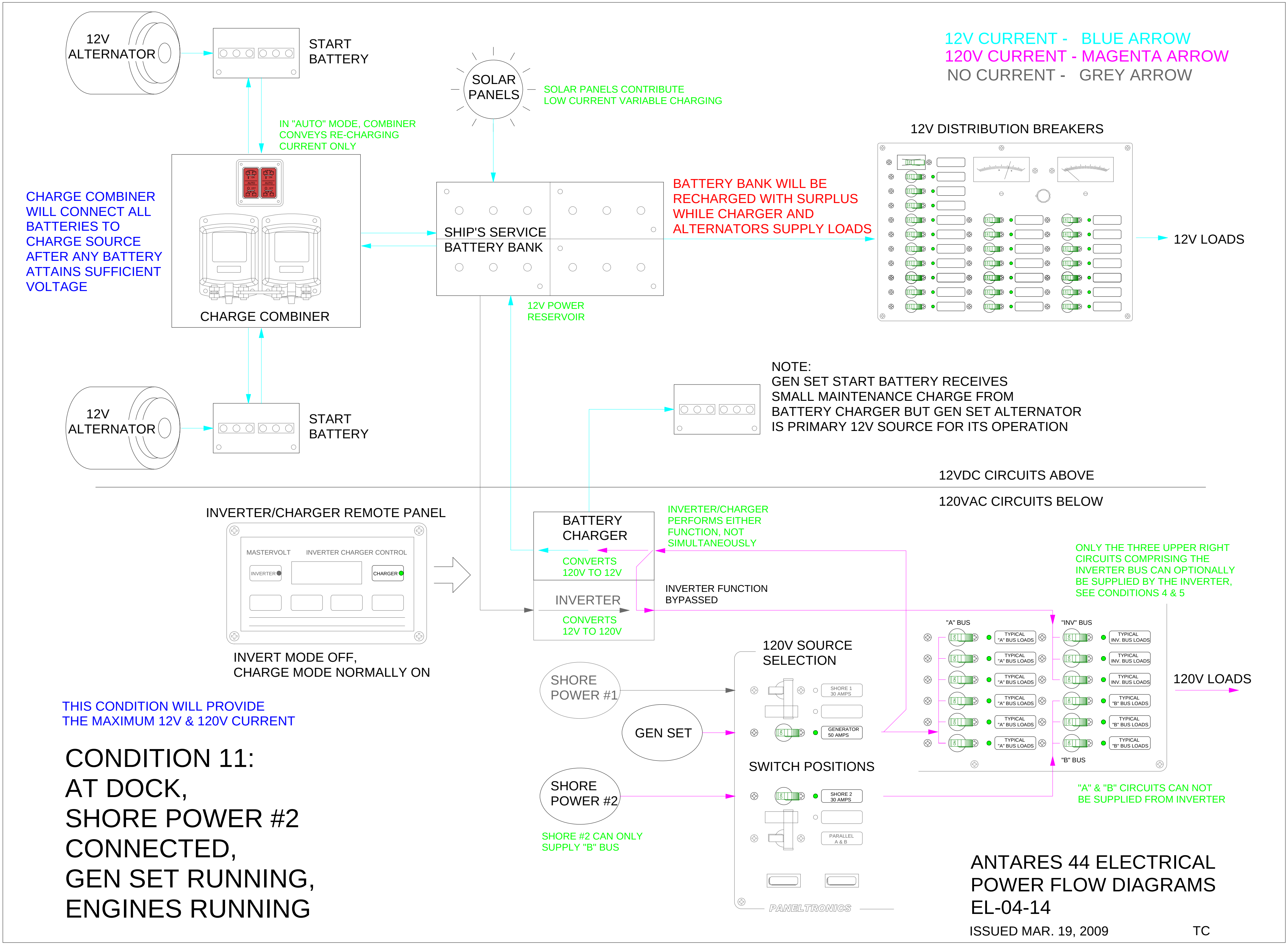
CONDITION 8:
AT DOCK, SHORE POWER #1 CONNECTED, ENGINES OFF

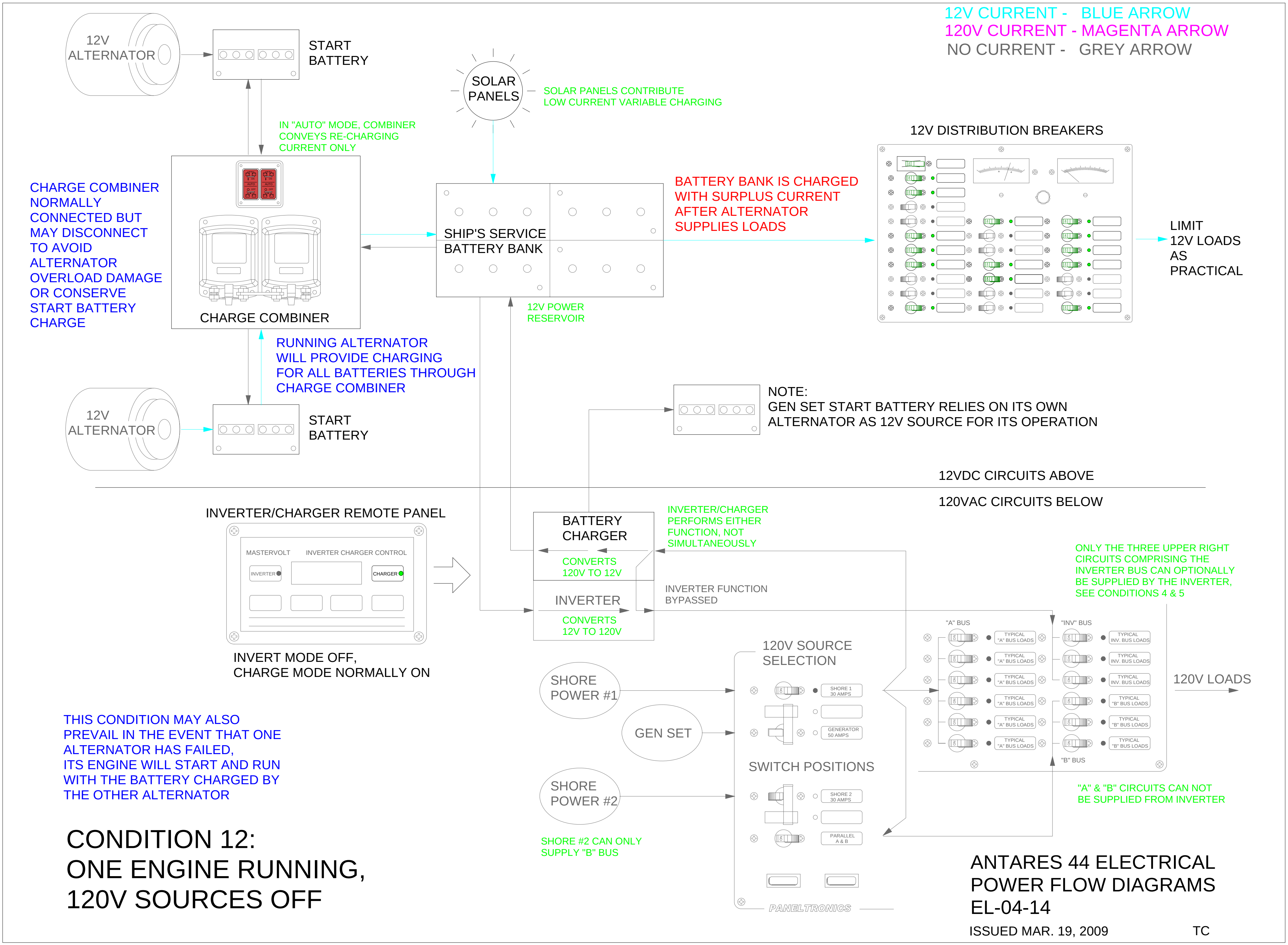
ANTARES 44 ELECTRICAL POWER FLOW DIAGRAMS
EL-04-14
ISSUED MAR. 19, 2009 TC

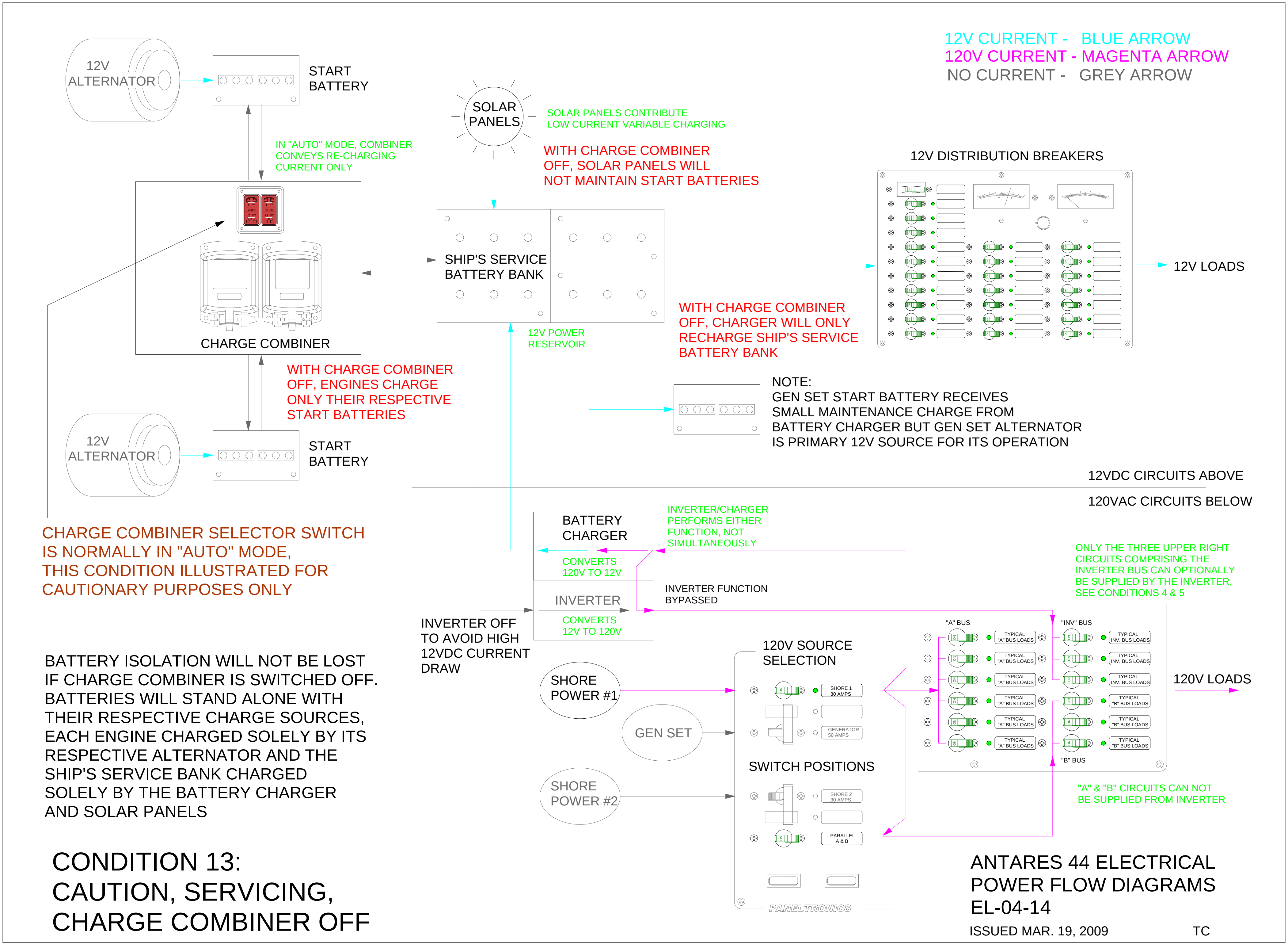

12V CURRENT - BLUE ARROW
120V CURRENT - MAGENTA ARROW
NO CURRENT - GREY ARROW
12V ALTERNATOR
START BATTERY
SOLAR PANELS
SOLAR PANELS CONTRIBUTE LOW CURRENT VARIABLE CHARGING
IN "AUTO" MODE, COMBINER CONVEYS RE-CHARGING CURRENT ONLY
CHARGE COMBINER WILL CONNECT ALL BATTERIES TO CHARGE SOURCE AFTER ANY BATTERY ATTAINS SUFFICIENT VOLTAGE
CHARGE COMBINER
SHIP'S SERVICE BATTERY BANK
BATTERY BANK WILL BE RECHARGED WITH SURPLUS WHILE CHARGER SUPPLIES LOADS
12V DISTRIBUTION BREAKERS
12V LOADS
12V POWER RESERVOIR
12V ALTERNATOR
START BATTERY
NOTE:
GEN SET START BATTERY RECEIVES SMALL MAINTENANCE CHARGE FROM BATTERY CHARGER BUT GEN SET ALTERNATOR IS PRIMARY 12V SOURCE FOR ITS OPERATION
12VDC CIRCUITS ABOVE
120VAC CIRCUITS BELOW
INVERTER/CHARGER REMOTE PANEL
MASTERVOLT
INVERTER CHARGER CONTROL
INVERTER
CHARGER
INVERT MODE OFF, CHARGE MODE NORMALLY ON
BATTERY CHARGER
CONVERTS 120V TO 12V
INVERTER
CONVERTS 12V TO 120V
INVERTER/CHARGER PERFORMS EITHER FUNCTION, NOT SIMULTANEOUSLY
INVERTER FUNCTION BYPASSED
ONLY THE THREE UPPER RIGHT CIRCUITS COMPRISING THE INVERTER BUS CAN OPTIONALLY BE SUPPLIED BY THE INVERTER, SEE CONDITIONS 4 & 5
"A" BUS
"INV" BUS
TYPICAL "A" BUS LOADS
TYPICAL INV. BUS LOADS
TYPICAL "B" BUS LOADS
"B" BUS
120V LOADS
120V SOURCE SELECTION
SHORE 1 30 AMPS
GENERATOR 50 AMPS
SWITCH POSITIONS
SHORE 2 30 AMPS
PARALLEL A & B
PANELTRONICS
SHORE POWER #1
GEN SET
SHORE POWER #2
SHORE #2 CAN ONLY SUPPLY "B" BUS
"A" & "B" CIRCUITS CAN NOT BE SUPPLIED FROM INVERTER
CONDITION 9:
AT DOCK,
SHORE POWER # 1& #2 CONNECTED
ENGINES OFF
ANTARES 44 ELECTRICAL POWER FLOW DIAGRAMS
EL-04-14
ISSUED MAR. 19, 2009
TC



12V CURRENT - BLUE ARROW
120V CURRENT - MAGENTA ARROW
NO CURRENT - GREY ARROW
12V ALTERNATOR
START BATTERY
SOLAR PANELS
SOLAR PANELS CONTRIBUTE LOW CURRENT VARIABLE CHARGING
IN "AUTO" MODE, COMBINER CONVEYS RE-CHARGING CURRENT ONLY
12V DISTRIBUTION BREAKERS
CHARGE COMBINER WILL CONNECT ALL BATTERIES TO CHARGE SOURCE AFTER ANY BATTERY ATTAINS SUFFICIENT VOLTAGE
SHIP'S SERVICE BATTERY BANK
BATTERY BANK WILL BE RECHARGED WITH SURPLUS WHILE CHARGER SUPPLIES LOADS
12V LOADS
CHARGE COMBINER
12V POWER RESERVOIR
12V ALTERNATOR
START BATTERY
NOTE:
GEN SET START BATTERY RELIES ON ITS OWN ALTERNATOR AS 12V SOURCE FOR ITS OPERATION
12VDC CIRCUITS ABOVE
120VAC CIRCUITS BELOW
INVERTER/CHARGER REMOTE PANEL
MASTERVOLT
INVERTER CHARGER CONTROL
INVERTER
CHARGER
BATTERY CHARGER
CONVERTS 120V TO 12V
INVERTER/CHARGER PERFORMS EITHER FUNCTION, NOT SIMULTANEOUSLY
INVERTER
CONVERTS 12V TO 120V
INVERTER FUNCTION BYPASSED
ONLY THE THREE UPPER RIGHT CIRCUITS COMPRISING THE INVERTER BUS CAN OPTIONALLY BE SUPPLIED BY THE INVERTER, SEE CONDITIONS 4 & 5
INVERT MODE OFF, CHARGE MODE NORMALLY ON
"A" BUS
"INV" BUS
TYPICAL "A" BUS LOADS
TYPICAL INV. BUS LOADS
TYPICAL "B" BUS LOADS
"B" BUS
120V SOURCE SELECTION
SHORE 1 30 AMPS
GENERATOR 50 AMPS
SHORE POWER #1
GEN SET
120V LOADS
SWITCH POSITIONS
SHORE 2 30 AMPS
PARALLEL A & B
SHORE POWER #2
"A" & "B" CIRCUITS CAN NOT BE SUPPLIED FROM INVERTER
SHORE #2 CAN ONLY SUPPLY "B" BUS
PANELTRONICS
CONDITION 10:
AT DOCK,
SHORE POWER # 1& #2
CONNECTED
ENGINES RUNNING
ANTARES 44 ELECTRICAL
POWER FLOW DIAGRAMS
EL-04-14
ISSUED MAR. 19, 2009
TC


12V CURRENT - BLUE ARROW
120V CURRENT - MAGENTA ARROW
NO CURRENT - GREY ARROW
12V ALTERNATOR
START BATTERY
SOLAR PANELS
SOLAR PANELS CONTRIBUTE LOW CURRENT VARIABLE CHARGING
IN "AUTO" MODE, COMBINER CONVEYS RE-CHARGING CURRENT ONLY
12V DISTRIBUTION BREAKERS
CHARGE COMBINER WILL CONNECT ALL BATTERIES TO CHARGE SOURCE AFTER ANY BATTERY ATTAINS SUFFICIENT VOLTAGE
SHIP'S SERVICE BATTERY BANK
BATTERY BANK WILL BE RECHARGED WITH SURPLUS WHILE CHARGER AND ALTERNATORS SUPPLY LOADS
12V LOADS
CHARGE COMBINER
12V POWER RESERVOIR
NOTE:
GEN SET START BATTERY RECEIVES SMALL MAINTENANCE CHARGE FROM BATTERY CHARGER BUT GEN SET ALTERNATOR IS PRIMARY 12V SOURCE FOR ITS OPERATION
12V ALTERNATOR
START BATTERY
12VDC CIRCUITS ABOVE
120VAC CIRCUITS BELOW
INVERTER/CHARGER REMOTE PANEL
MASTERVOLT
INVERTER CHARGER CONTROL
INVERTER
CHARGER
BATTERY CHARGER
CONVERTS 120V TO 12V
INVERTER
CONVERTS 12V TO 120V
INVERTER/CHARGER PERFORMS EITHER FUNCTION, NOT SIMULTANEOUSLY
INVERTER FUNCTION BYPASSED
ONLY THE THREE UPPER RIGHT CIRCUITS COMPRISING THE INVERTER BUS CAN OPTIONALLY BE SUPPLIED BY THE INVERTER, SEE CONDITIONS 4 & 5
"A" BUS
"INV" BUS
"B" BUS
TYPICAL "A" BUS LOADS
TYPICAL INV. BUS LOADS
TYPICAL "B" BUS LOADS
120V LOADS
INVERT MODE OFF, CHARGE MODE NORMALLY ON
120V SOURCE SELECTION
SHORE 1 30 AMPS
GENERATOR 50 AMPS
SHORE 2 30 AMPS
PARALLEL A & B
SHORE POWER #1
GEN SET
SHORE POWER #2
SWITCH POSITIONS
"A" & "B" CIRCUITS CAN NOT BE SUPPLIED FROM INVERTER
SHORE #2 CAN ONLY SUPPLY "B" BUS
PANELTRONICS
THIS CONDITION WILL PROVIDE THE MAXIMUM 12V & 120V CURRENT
CONDITION 11:
AT DOCK,
SHORE POWER #2
CONNECTED,
GEN SET RUNNING,
ENGINES RUNNING
ANTARES 44 ELECTRICAL POWER FLOW DIAGRAMS
EL-04-14
ISSUED MAR. 19, 2009
TC


12V CURRENT - BLUE ARROW
120V CURRENT - MAGENTA ARROW
NO CURRENT - GREY ARROW
12V ALTERNATOR
START BATTERY
SOLAR PANELS
SOLAR PANELS CONTRIBUTE LOW CURRENT VARIABLE CHARGING
IN "AUTO" MODE, COMBINER CONVEYS RE-CHARGING CURRENT ONLY
12V DISTRIBUTION BREAKERS
CHARGE COMBINER NORMALLY CONNECTED BUT MAY DISCONNECT TO AVOID ALTERNATOR OVERLOAD DAMAGE OR CONSERVE START BATTERY CHARGE
SHIP'S SERVICE BATTERY BANK
BATTERY BANK IS CHARGED WITH SURPLUS CURRENT AFTER ALTERNATOR SUPPLIES LOADS
LIMIT 12V LOADS AS PRACTICAL
CHARGE COMBINER
12V POWER RESERVOIR
RUNNING ALTERNATOR WILL PROVIDE CHARGING FOR ALL BATTERIES THROUGH CHARGE COMBINER
12V ALTERNATOR
START BATTERY
NOTE:
GEN SET START BATTERY RELIES ON ITS OWN ALTERNATOR AS 12V SOURCE FOR ITS OPERATION
12VDC CIRCUITS ABOVE
120VAC CIRCUITS BELOW
INVERTER/CHARGER REMOTE PANEL
MASTERVOLT INVERTER CHARGER CONTROL
INVERTER
CHARGER
BATTERY CHARGER
CONVERTS 120V TO 12V
INVERTER
CONVERTS 12V TO 120V
INVERTER/CHARGER PERFORMS EITHER FUNCTION, NOT SIMULTANEOUSLY
INVERTER FUNCTION BYPASSED
ONLY THE THREE UPPER RIGHT CIRCUITS COMPRISING THE INVERTER BUS CAN OPTIONALLY BE SUPPLIED BY THE INVERTER, SEE CONDITIONS 4 & 5
INVERT MODE OFF, CHARGE MODE NORMALLY ON
120V SOURCE SELECTION
SHORE POWER #1
GEN SET
SHORE 1 30 AMPS
GENERATOR 50 AMPS
SWITCH POSITIONS
SHORE 2 30 AMPS
PARALLEL A & B
SHORE POWER #2
SHORE #2 CAN ONLY SUPPLY "B" BUS
PANELTRONICS
"A" BUS
"INV" BUS
"B" BUS
TYPICAL "A" BUS LOADS
TYPICAL INV. BUS LOADS
TYPICAL "B" BUS LOADS
120V LOADS
"A" & "B" CIRCUITS CAN NOT BE SUPPLIED FROM INVERTER
THIS CONDITION MAY ALSO PREVAIL IN THE EVENT THAT ONE ALTERNATOR HAS FAILED, ITS ENGINE WILL START AND RUN WITH THE BATTERY CHARGED BY THE OTHER ALTERNATOR
CONDITION 12:
ONE ENGINE RUNNING,
120V SOURCES OFF
ANTARES 44 ELECTRICAL POWER FLOW DIAGRAMS
EL-04-14
ISSUED MAR. 19, 2009
TC

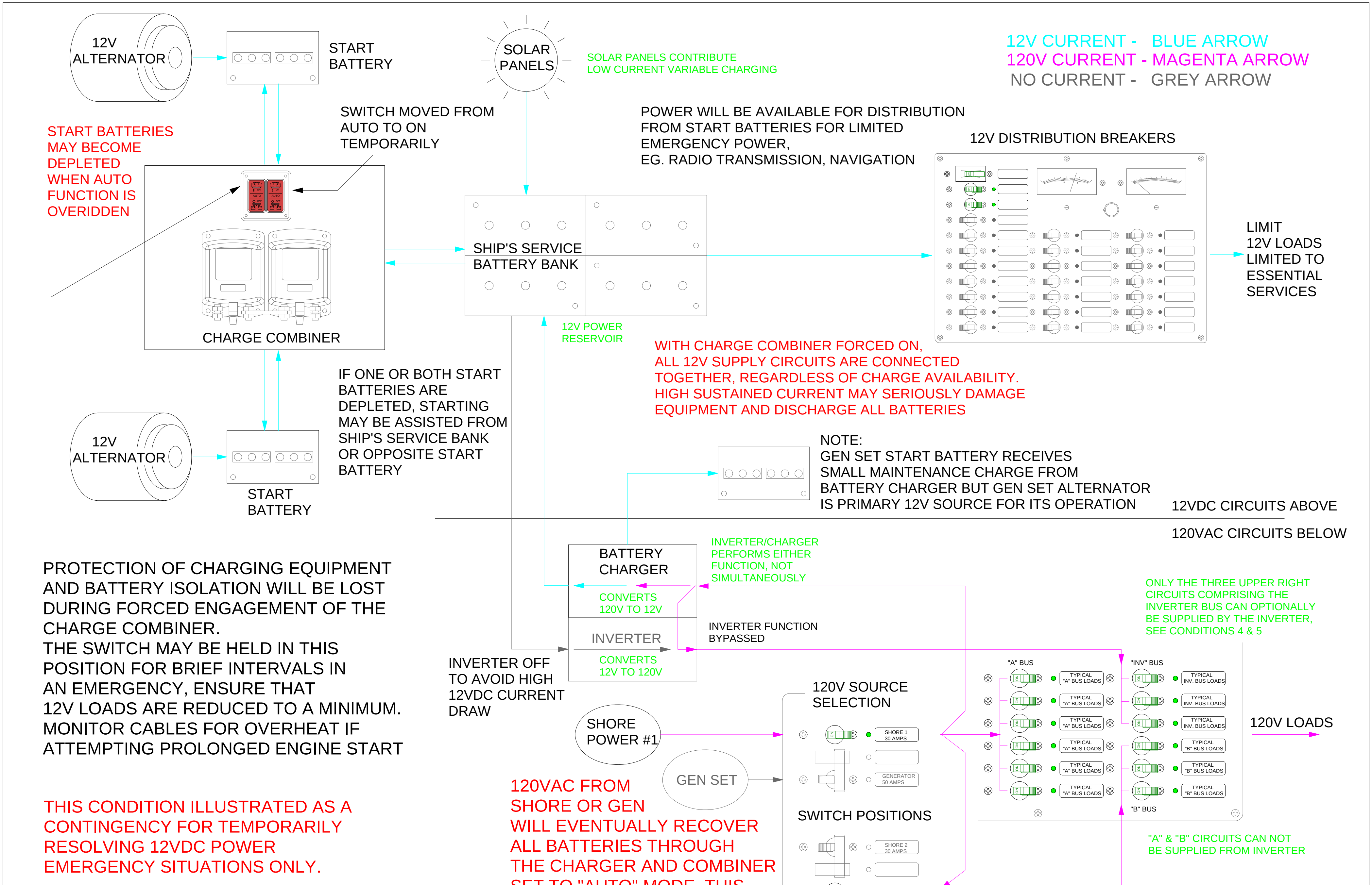


BATTERY ISOLATION WILL NOT BE LOST IF CHARGE COMBINER IS SWITCHED OFF. BATTERIES WILL STAND ALONE WITH THEIR RESPECTIVE CHARGE SOURCES, EACH ENGINE CHARGED SOLELY BY ITS RESPECTIVE ALTERNATOR AND THE SHIP'S SERVICE BANK CHARGED SOLELY BY THE BATTERY CHARGER AND SOLAR PANELS

CONDITION 13: CAUTION, SERVICING, CHARGE COMBINER OFF

ANTARES 44 ELECTRICAL POWER FLOW DIAGRAMS
EL-04-14

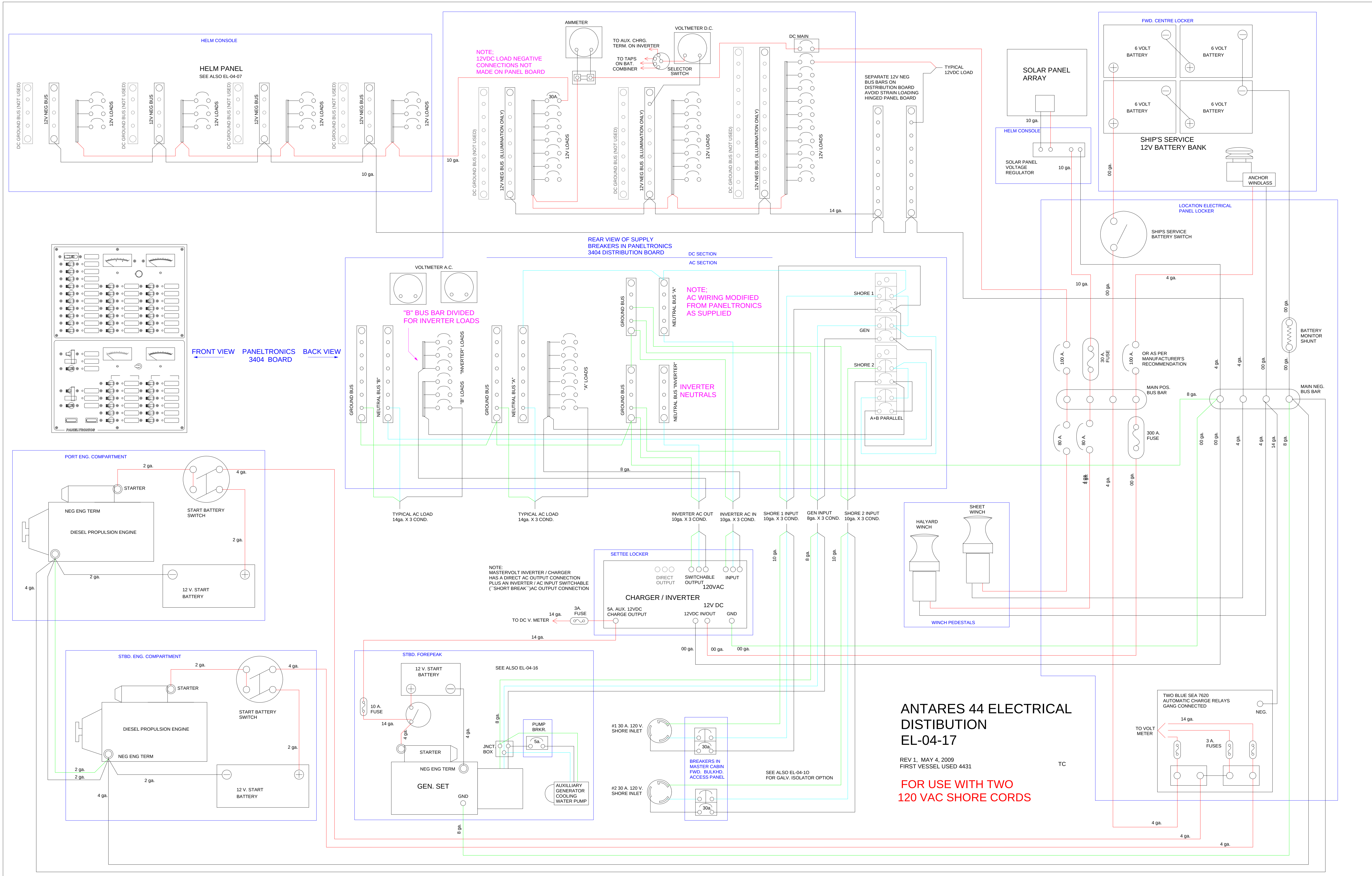
ISSUED MAR. 19, 2009 TC



CONDITION 14:
CHARGE COMBINER
FORCED "ON" EMERGENCY

ANTARES 44 ELECTRICAL
POWER FLOW DIAGRAMS
EL-04-14

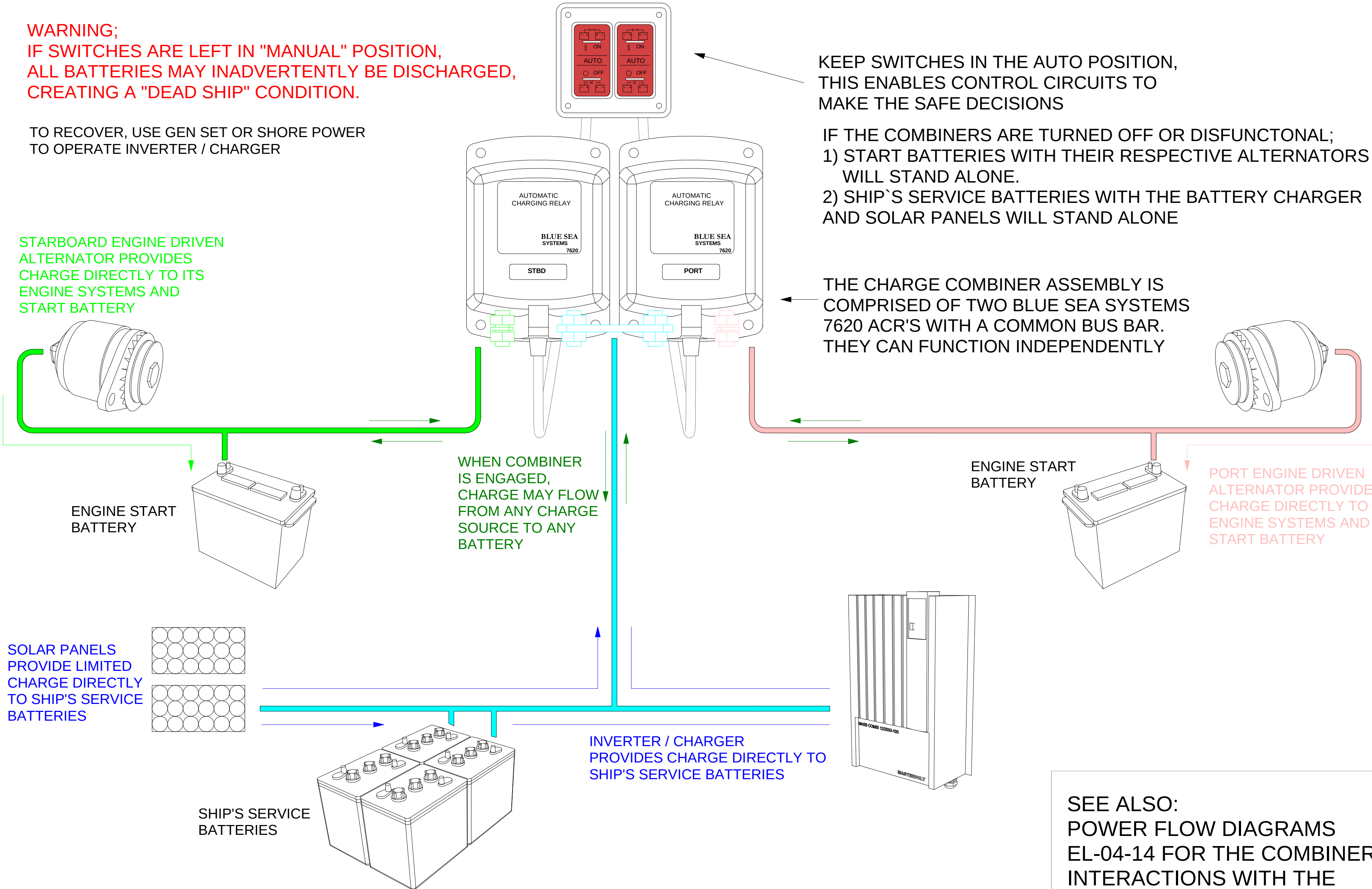
ISSUED MAR. 19, 2009 TC


HELM CONSOLE
HELM PANEL
SEE ALSO EL-04-07
DC GROUND BUS (NOT USED)
12V NEG BUS
12V LOADS
10 ga.
NOTE;
12VDC LOAD NEGATIVE
CONNECTIONS NOT
MADE ON PANEL BOARD
AMMETER
TO AUX. CHRG.
TERM. ON INVERTER
TO TAPS
ON BAT.
COMBINER
VOLTMETER D.C.
SELECTOR
SWITCH
DC MAIN
30A
12V NEG BUS (ILLUMINATION ONLY)
TYPICAL
12VDC LOAD
SEPARATE 12V NEG
BUS BARS ON
DISTRIBUTION BOARD
AVOID STRAIN LOADING
HINGED PANEL BOARD
14 ga.
SOLAR PANEL
ARRAY
HELM CONSOLE
SOLAR PANEL
VOLTAGE
REGULATOR
FWD. CENTRE LOCKER
6 VOLT
BATTERY
SHIP'S SERVICE
12V BATTERY BANK
ANCHOR
WINDLASS
00 ga.
LOCATION ELECTRICAL
PANEL LOCKER
SHIPS SERVICE
BATTERY SWITCH
REAR VIEW OF SUPPLY
BREAKERS IN PANELTRONICS
3404 DISTRIBUTION BOARD
DC SECTION
AC SECTION
VOLTMETER A.C.
"B" BUS BAR DIVIDED
FOR INVERTER LOADS
"INVERTER" LOADS
"B" LOADS
"A" LOADS
GROUND BUS
NEUTRAL BUS "B"
NEUTRAL BUS "A"
NEUTRAL BUS "INVERTER"
NOTE;
AC WIRING MODIFIED
FROM PANELTRONICS
AS SUPPLIED
INVERTER
NEUTRALS
SHORE 1
GEN
SHORE 2
A+B PARALLEL
FRONT VIEW
PANELTRONICS
3404 BOARD
BACK VIEW
100 A.
30 A.
FUSE
OR AS PER
MANUFACTURER'S
RECOMMENDATION
MAIN POS.
BUS BAR
80 A.
300 A.
FUSE
MAIN NEG.
BUS BAR
BATTERY
MONITOR
SHUNT
4 ga.
8 ga.
PORT ENG. COMPARTMENT
2 ga.
STARTER
START BATTERY
SWITCH
NEG ENG TERM
DIESEL PROPULSION ENGINE
12 V. START
BATTERY
8 ga.
TYPICAL AC LOAD
14ga. X 3 COND.
INVERTER AC OUT
10ga. X 3 COND.
INVERTER AC IN
10ga. X 3 COND.
SHORE 1 INPUT
10ga. X 3 COND.
GEN INPUT
8ga. X 3 COND.
SHORE 2 INPUT
10ga. X 3 COND.
HALYARD
WINCH
SHEET
WINCH
WINCH PEDESTALS
NOTE:
MASTERVOLT INVERTER / CHARGER
HAS A DIRECT AC OUTPUT CONNECTION
PLUS AN INVERTER / AC INPUT SWITCHABLE
("SHORT BREAK")AC OUTPUT CONNECTION
SETTEE LOCKER
DIRECT
OUTPUT
SWITCHABLE
OUTPUT
INPUT
120VAC
CHARGER / INVERTER
12V DC
5A. AUX. 12VDC
CHARGE OUTPUT
12VDC IN/OUT
GND
3A.
FUSE
TO DC V. METER
STBD. ENG. COMPARTMENT
STBD. FOREPEAK
SEE ALSO EL-04-16
10 A.
FUSE
JNCT
BOX
PUMP
BRKR.
5a.
STARTER
GEN. SET
AUXILLIARY
GENERATOR
COOLING
WATER PUMP
#1 30 A. 120 V.
SHORE INLET
#2 30 A. 120 V.
SHORE INLET
30a.
BREAKERS IN
MASTER CABIN
FWD. BULKHD.
ACCESS PANEL
SEE ALSO EL-04-10
FOR GALV. ISOLATOR OPTION
ANTARES 44 ELECTRICAL
DISTIBUTION
EL-04-17
REV 1, MAY 4, 2009
FIRST VESSEL USED 4431
TC
FOR USE WITH TWO
120 VAC SHORE CORDS
TWO BLUE SEA 7620
AUTOMATIC CHARGE RELAYS
GANG CONNECTED
NEG.
TO VOLT
METER
3 A.
FUSES

THE CHARGE COMBINER

ALSO DESIGNATED AS AN "ACR",
(AUTOMATIC CHARGE RELAY)
BY SOME MANUFACTURERS

INSTALLATION AND SYSTEM



SEE ALSO:
POWER FLOW DIAGRAMS
EL-04-14 FOR THE COMBINER'S
INTERACTIONS WITH THE
VESSEL'S 12 VOLT DC SYSTEMS

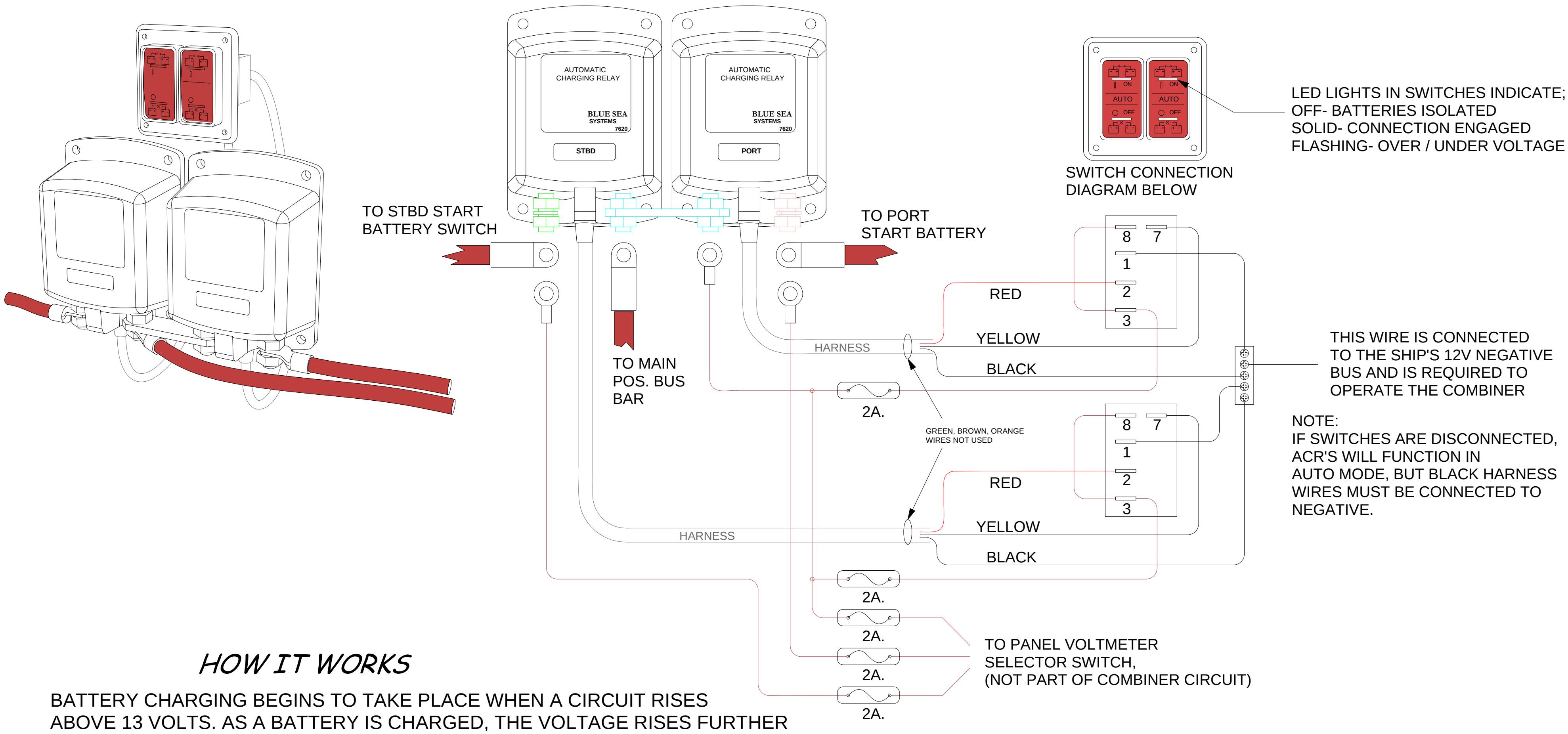
THE COMBINER CONNECTS CHARGING SOURCES TO ANY BATTERY SYSTEM BUT NEVER FORGETS TO DISCONNECT AND PRESERVE BATTERY SYSTEM ISOLATION WHEN BATTERIES ARE BEING DISCHARGED

ANTARES YACHTS ELECTRICAL
CHARGE COMBINER
EL-04-18 FEB. 16, 2010

THE CHARGE COMBINER

ALSO DESIGNATED AS AN "ACR",
(AUTOMATIC CHARGE RELAY)
BY SOME MANUFACTURERS

INSTALLATION AND SYSTEM



HOW IT WORKS

BATTERY CHARGING BEGINS TO TAKE PLACE WHEN A CIRCUIT RISES ABOVE 13 VOLTS. AS A BATTERY IS CHARGED, THE VOLTAGE RISES FURTHER TO APPROXIMATLEY 14.2 AS FULL CHARGE IS ACHIEVED.
WHEN BATTERIES ARE DISCHARGING THEY QUICKLY FALL BELOW 13V.

WHEN THE VOLTAGE DETECTED AT ONE OF THE LARGE TERMINALS OF AN ACR RISES TO 13.3V INDICATING AN AVAILABLE CHARGE THE INTERNAL PROCESSOR ENERGIZES A MAGNETIC SWITCH, CONNECTING THE BATTERY CIRCUITS TO SHARE THE AVAILABLE CHARGE.

WHEN CHARGE IS NO LONGER AVAILABLE, THE VOLTAGE DROPS BELOW 13V ANDTHE PROCESSOR RELEASES THE MAGNETIC SWITCHES RETURNING THE BATTERIES WITH THEIR RESPECTIVE CIRCUITS TO ISOLATION.

IF A PROCESSOR DETECTS A VOLTAGE BELOW 9.6 OR ABOVE 16.2, IT WILL NOT SUSTAIN A CONNECTION, THEREBY PROTECTING CHARGING EQUIPMENT FROM DAMAGE.

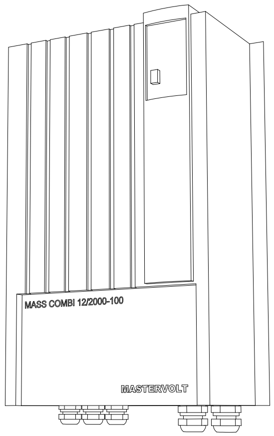
THE PROCESSOR USES THE VOLTAGE READINGS TO DISTINGUISH BETWEEN CHARGE AND DISCHARGE MODES. IN AUTO MODE IT WILL NEVER ALLOW ONE BATTERY OR ITS SYSTEM TO DEPLETE ANOTHER.

SEE ALSO:
POWER FLOW DIAGRAMS
EL-04-14 FOR THE COMBINER'S
INTERACTIONS WITH THE
VESSEL'S 12 VOLT DC SYSTEMS

ANTARES YACHTS ELECTRICAL
CHARGE COMBINER
EL-04-18 FEB. 16, 2010

THE CHARGER / INVERTER

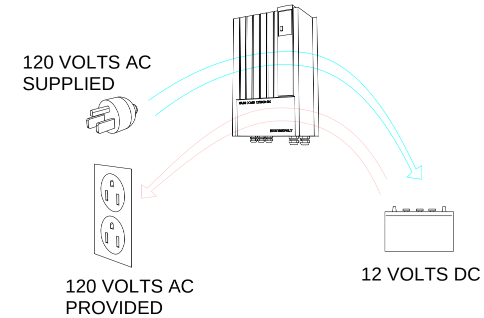
AN ON-BOARD PUSH-ME-PULL-YOU



WHAT DOES IT DO?

1) WHEN IN CHARGING MODE,
IT TAKES 120VOLT AC POWER FROM THE SHORE POWER OR GENERATOR AND USES IT TO CREATE 12VOLT DC POWER TO SUPPLY THE 12V SHIP'S LOADS AND RECHARGE BATTERIES .
IT HAS VERY SOPHISTICATED SENSING AND ADJUSTING CIRCUITS TO REFINE THE OUTPUT VOLTAGE TO SUIT THE BATTERY TYPE AND STATE OF CHARGE.

2) WHEN IN INVERTING MODE,
IT TAKES 12 VOLT DC POWER FROM THE SHIP'S SERVICE BATTERIES AND USES IT TO CREATE A REFINED 120 VOLT AC OUTPUT SUITABLE FOR USE BY DOMESTIC EQUIPMENT AND ENTERTAINMENT ELECTRONICS.

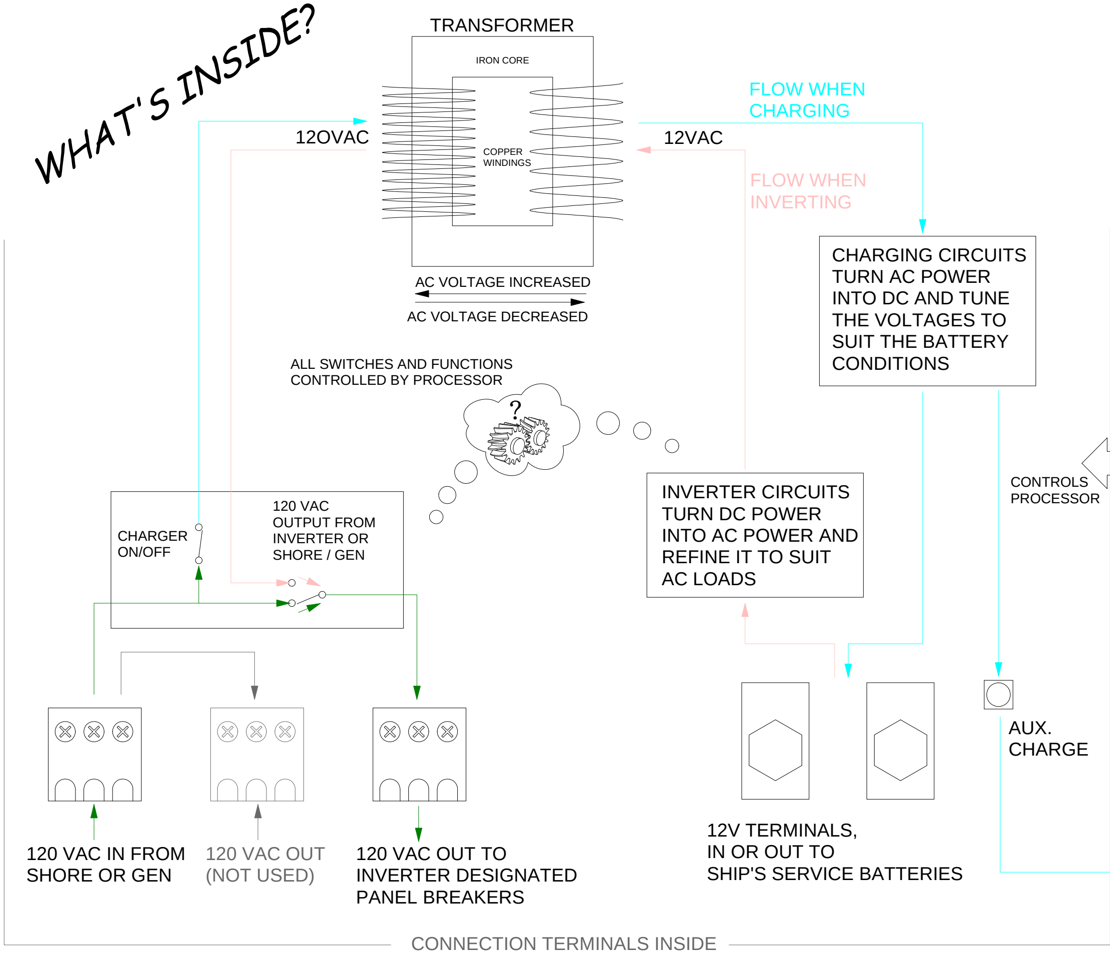


WHY INTEGRATE THE FUNCTIONS?

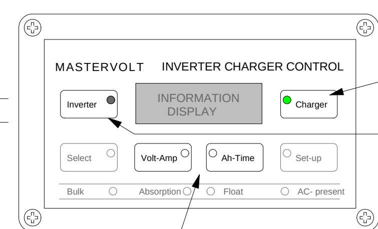
YOU HAVE TO HAVE A CHARGER BUT AN INVERTER IS A LUXURY, HOWEVER FOR A MODEST ADDITIONAL COST, THE INVERTER FUNCTION CAN BE TAGGED ON.

THE HEAVY AND COSTLY PRIMARY COMPONENT COMMON TO BOTH FUNCTIONS IS THE TRANSFORMER. IT WOULD HAVE TO BE DUPLICATED IN SEPARATED UNITS AND THEY WOULD NEVER FUNCTION CONCURRENTLY. AT ANY GIVEN TIME, ONE WOULD BE GOING ALONG FOR THE RIDE. INVERTERS MAKE HUGE DEMANDS ON BATTERY CAPACITY AND CONSEQUENTLY REQUIRE LARGE RECHARGING CAPACITY. INTERGRATED UNITS TEND TO HAVE CORRESPONDINGLY HIGHER THAN NORMAL CHARGE CAPACITY.

WHAT'S INSIDE?



THE INVERTER/CHARGER REMOTE PANEL IS INTEGRATED WITH THE BATTERY MONITORING SYSTEM



THE CHARGE MODE IS NORMALLY ON AND ANY TIME THERE IS 120VAC POWER AVAILABLE FROM THE SHORE OR GEN SET THE CHARGER WILL BE ACTIVE

WITH INVERT MODE ON,
THE PROCESSOR WILL ENGAGE THE INVERTER FUNCTION AND DRAW POWER FROM THE BATTERIES. HOWEVER, IF POWER IS AVAILABLE AT THE 120 VAC INPUT, THAT POWER WILL BE AUTOMATICALLY CARRIED THROUGH BY PREFERENCE. NORMALLY THIS FUNCTION IS OFF TO AVOID INADVERTENTLY DISCHARGING THE BATTERIES IN THE EVENT THAT THE SHORE POWER IS ACCIDENTLY KNOCKED OFF

BATTERY MONITOR FUNCTIONS ESTIMATES BATTTERY USAGE AND POWER REMAINING

SECONDARY 5A. MAX. CHARGE CIRCUIT MAINTAINS GEN SET BATTERY WHEN CHARGER FUNCTION IS ON AND 120VAC POWER IS AVAILABLE.
THIS PROVIDES REDUNDANCY SHOULD THE GEN SET ALTERNATOR FAIL AND ALSO PROVIDES MAINTENANCE CHARGE WHEN AT THE DOCK.

SEE ALSO:
POWER FLOW DIAGRAMS EL-04-14 FOR THE CHARGER/INVERTER'S INTERACTIONS WITH THE VESSEL'S OTHER ELECTRICAL SYSTEMS

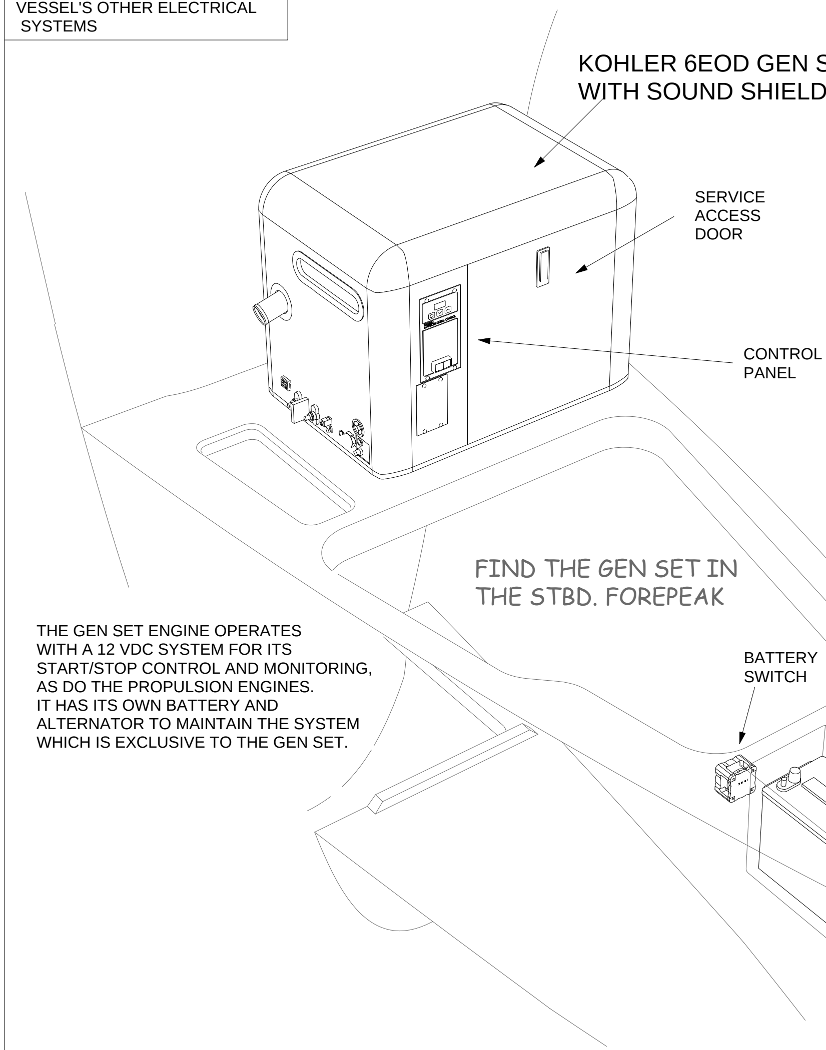
ANTARE YACHTS ELECTRICAL
INVERTER / CHARGER DIAGRAM
EL-04-19 MAY 12, 2009

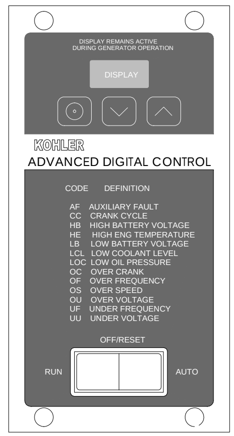
ANTARE YACHTS ELECTRICAL
GENERATOR SET DIAGRAM
EL-04-20 MAY 12, 2009

SEE ALSO:
POWER FLOW DIAGRAMS
EL-04-14 FOR THE GEN SET'S INTERACTIONS WITH THE VESSEL'S OTHER ELECTRICAL SYSTEMS

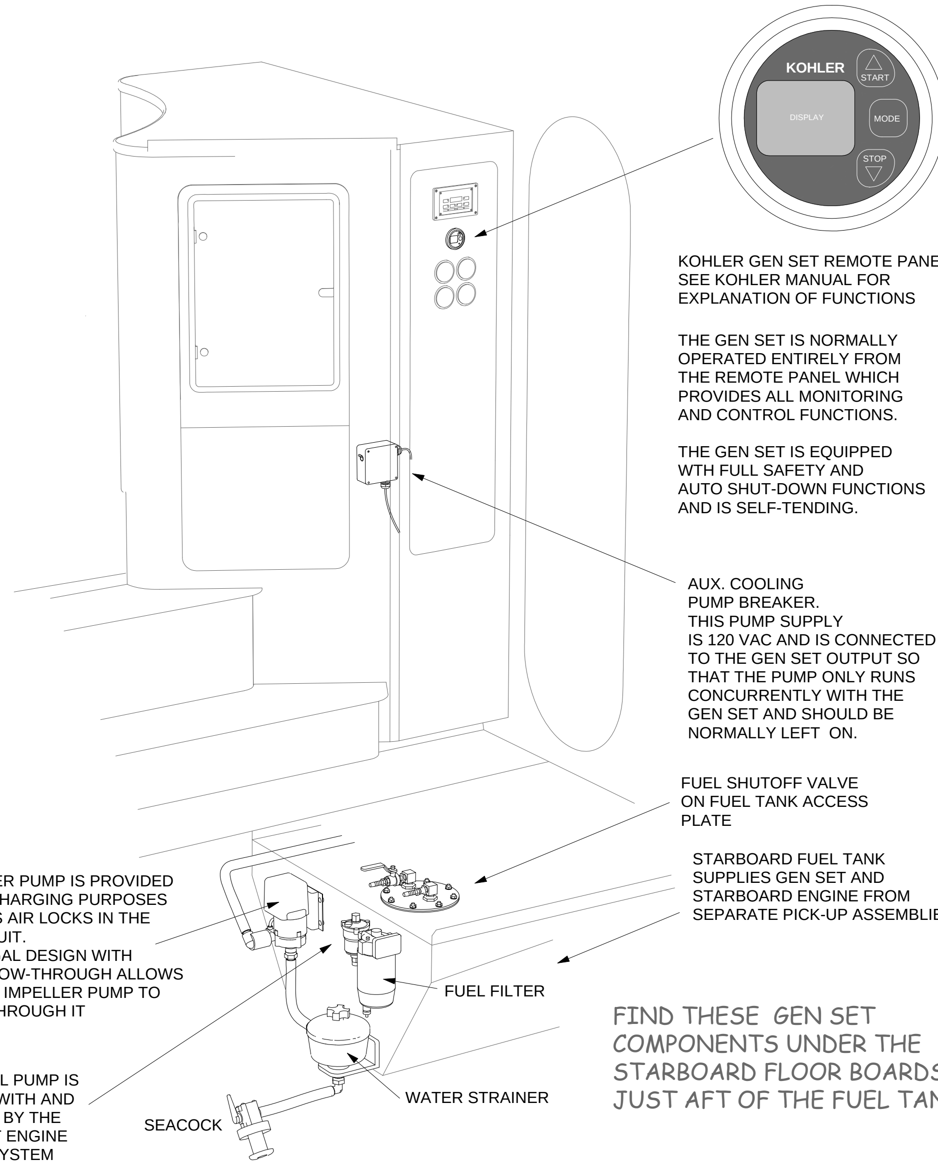
THE GENERATOR SET

NOTE; ELECTRICITY AD CAMPAIGN SPOKESMAN WAS - R. REAGAN!





THE GEN SET ENGINE OPERATES WITH A 12 VDC SYSTEM FOR ITS START/STOP CONTROL AND MONITORING, AS DO THE PROPULSION ENGINES. IT HAS ITS OWN BATTERY AND ALTERNATOR TO MAINTAIN THE SYSTEM WHICH IS EXCLUSIVE TO THE GEN SET.



KOHLER GEN SET REMOTE PANEL, SEE KOHLER MANUAL FOR EXPLANATION OF FUNCTIONS

THE GEN SET IS NORMALLY OPERATED ENTIRELY FROM THE REMOTE PANEL WHICH PROVIDES ALL MONITORING AND CONTROL FUNCTIONS.

THE GEN SET IS EQUIPPED WITH FULL SAFETY AND AUTO SHUT-DOWN FUNCTIONS AND IS SELF-TENDING.

AUX. COOLING PUMP BREAKER. THIS PUMP SUPPLY IS 120 VAC AND IS CONNECTED TO THE GEN SET OUTPUT SO THAT THE PUMP ONLY RUNS CONCURRENTLY WITH THE GEN SET AND SHOULD BE NORMALLY LEFT ON.

FUEL SHUTOFF VALVE ON FUEL TANK ACCESS PLATE

STARBOARD FUEL TANK SUPPLIES GEN SET AND STARBOARD ENGINE FROM SEPARATE PICK-UP ASSEMBLIES

THE AUX. WATER PUMP IS PROVIDED FOR SYSTEM CHARGING PURPOSES AND PREVENTS AIR LOCKS IN THE COOLING CIRCUIT. ITS CENTRIFUGAL DESIGN WITH UNIMPEDED FLOW-THROUGH ALLOWS THE GEN SET'S IMPELLER PUMP TO PULL WATER THROUGH IT AS REQUIRED.

THE AUX. FUEL PUMP IS CONNECTED WITH AND CONTROLLED BY THE 12 V. GEN SET ENGINE OPERATING SYSTEM

FIND THESE GEN SET COMPONENTS UNDER THE STARBOARD FLOOR BOARDS JUST AFT OF THE FUEL TANK

WHAT IT DOES

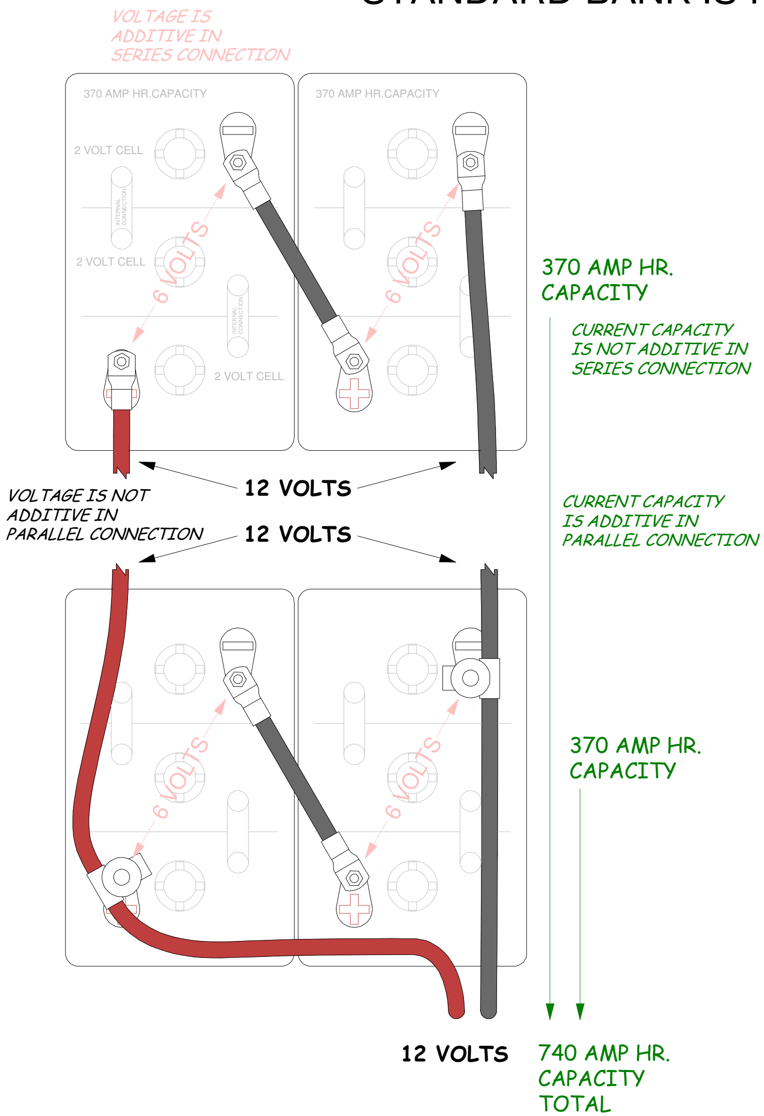
THE GENERATOR SET USES A DIESEL ENGINE TO PRODUCES 120 VAC POWER FOR USE IN THE DOMESTIC SERVICES ON BOARD.

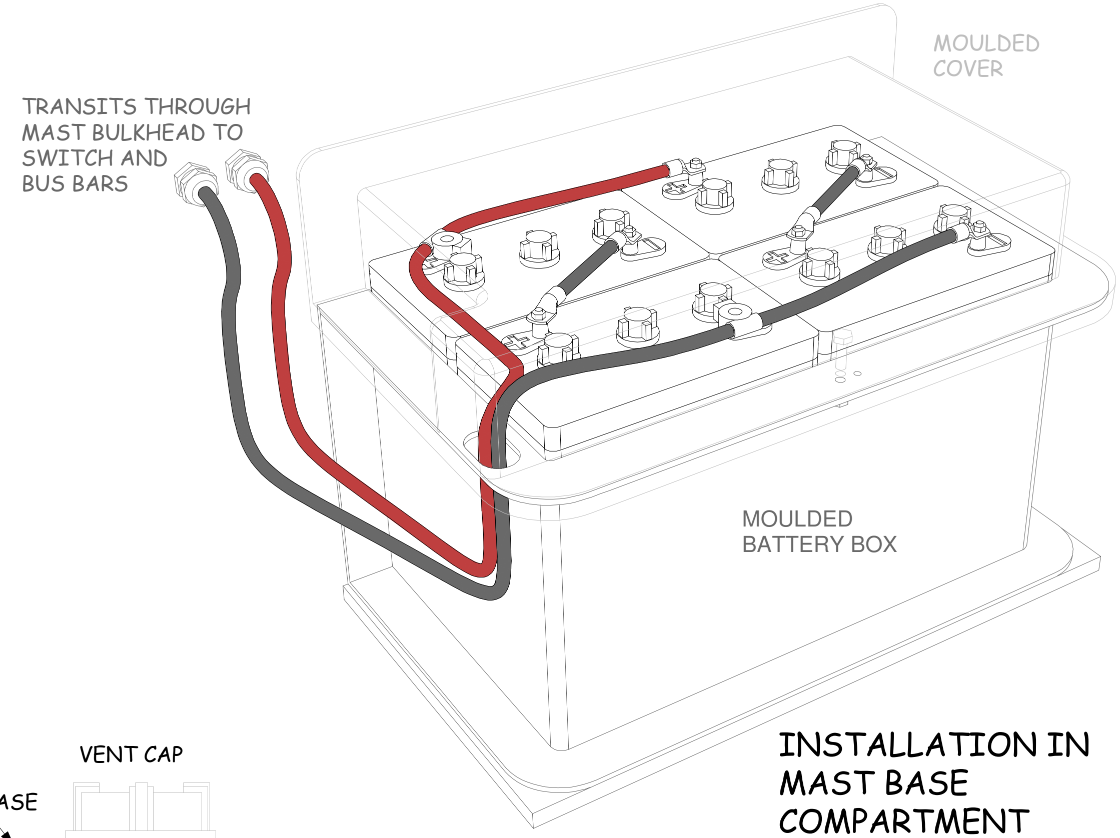
IT ALSO SUPPLIES 12 VDC POWER INDIRECTLY VIA THE BATTERY CHARGER TO SUPPLY THE SHIP'S 12 VOLT SYSTEMS AND RECHARGE THE BATTERIES.

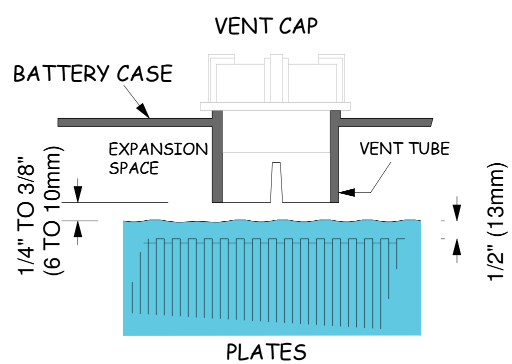
DUE TO THE HIGH GEN SET MOUNTING LOCATION AND ITS DISTANCE FROM THE FUEL TANK, AUXILIARY FUEL AND COOLING WATER PUMPS ARE PROVIDED. THE WATER PICKUP POINT IS AFT WHERE IT IS MORE LIKELY TO STAY IMMERSED WHILE SAILING

SHIP'S SERVICE BATTERIES

STANDARD BANK IS FOUR GROUP 8L16 DEEP CYCLE 6V BATTERIES







ELECTROLYTE LEVEL SHOULD BE MAINTAINED APPROXIMATELY 1/2" (13mm) ABOVE THE PLATES AND 1/4 TO 38" (6 TO 10mm) BELOW THE VENT TUBE.

DO NOT LET TOP OF PLATES DRY OUT, ADD DISTILLED WATER AS NECCESSARY

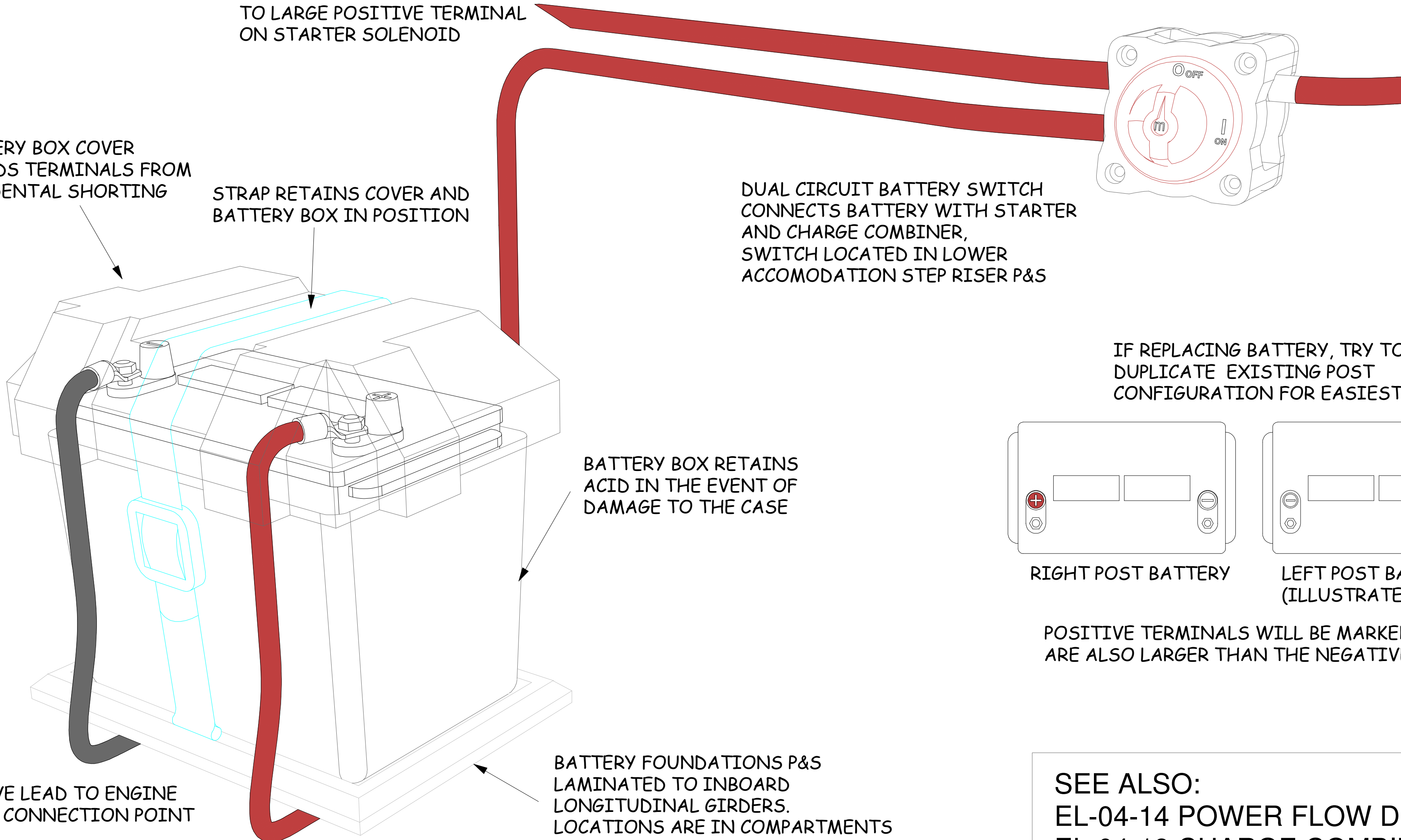
12V PAIRS ARE CREATED BY CONNECTING TWO 6V BATTERIES IN SERIES

12V SHIP'S SERVICE BANK IS CREATED BY CONNECTING TWO 12V PAIRS TOGETHER IN PARALLEL

SEE ALSO:
EL-04-14 POWER FLOW DIAGRAMS
EL-04-18 CHARGE COMBINER
EL-04-19 CHARGER/INVERTER
FOR INTERACTIONS WITH THE VESSEL'S 12 VOLT DC SYSTEMS

ANTARES YACHTS ELECTRICAL
SHIP'S SERVICE BATTERIES
EL-04-25 JAN. 22, 2010

ENGINE START BATTERIES



IF REPLACING BATTERY, TRY TO
DUPLICATE EXISTING POST
CONFIGURATION FOR EASIEST FIT.

RIGHT POST BATTERY

LEFT POST BATTERY
(ILLUSTRATED)

POSITIVE TERMINALS WILL BE MARKED AND
ARE ALSO LARGER THAN THE NEGATIVE

BATTERIES ARE FITTED PORT STARBOARD FOR ENGINE START EXCLUSIVELY.
SIZE IS GROUP 24

GEN SET START BATTERY IS IDENTICAL AND STANDS ALONE

SEE ALSO:
EL-04-14 POWER FLOW DIAGRAMS
EL-04-18 CHARGE COMBINER
EL-04-19 CHARGER/INVERTER
FOR INTERACTIONS WITH THE
VESSEL'S 12 VOLT DC SYSTEMS

ANTARES YACHTS ELECTRICAL
START BATTERIES
EL-04-26 JAN. 22, 2010

USING A PORTABLE BATTERY CHARGER

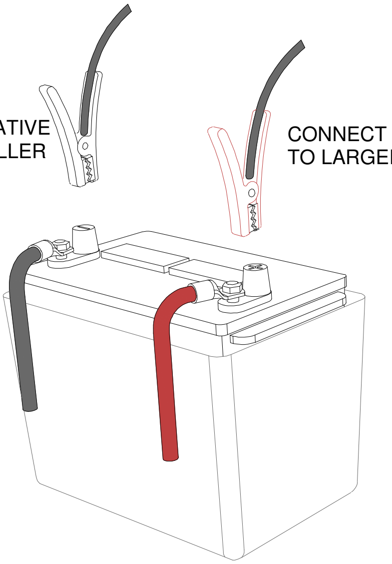
THE INSTALLED CHARGER / INVERTER AND ALTERNATORS WILL NORMALLY MAINTAIN BATTERY CHARGE. THIS INFORMATION IS PROVIDED FOR GUIDANCE IN THE EVENT OF DAMAGE TO OR FAILURE OF THE INSTALLED SYSTEMS

WARNING
RED TERMINAL MARKINGS, WIRING AND CLAMPS ARE POSITIVE POLARITY. BLACK ARE NEGATIVE.
ALWAYS CONNECT LIKE COLOUR AND POLARITY

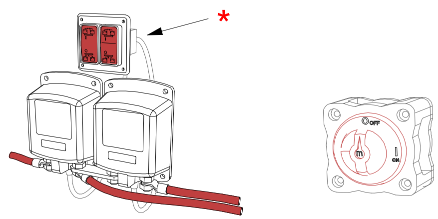
FOR EMERGENCY CHARGING AND ENGINE STARTER BOOST

CONNECT NEGATIVE CLAMP TO SMALLER BATTERY POST

CONNECT POSITIVE CLAMP TO LARGER BATTERY POST



ENGINE START BATTERIES

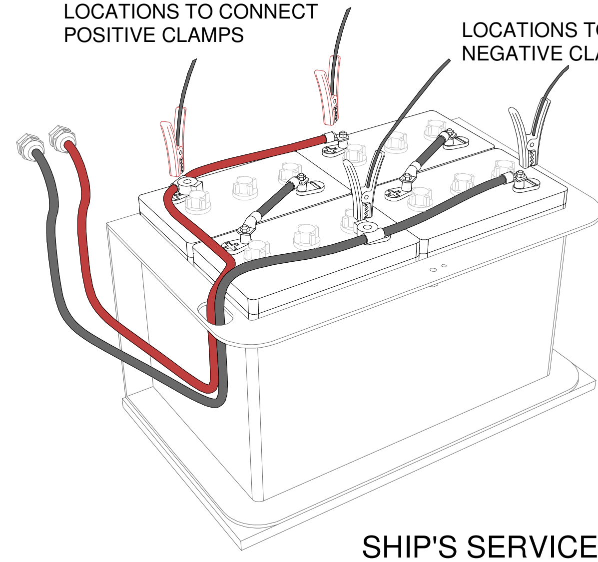


TURN CHARGE COMBINER SWITCH TO 'OFF' OR ISOLATE SYSTEMS USING THE BATTERY SWITCHES IF YOU WISH TO CONFINE THE CHARGE TO A PARTICULAR BATTERY.
OTHERWISE THE CHARGE MAY EVENTUALLY BE DISTRIBUTED TO THE OTHER BATTERIES ONCE FULL CHARGE IS OBTAINED IN THE CONNECTED BATTERY

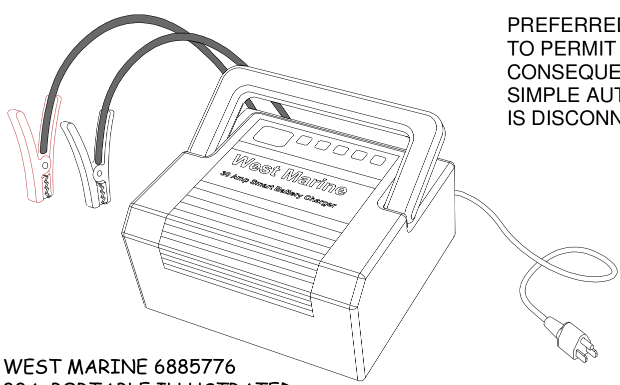
FOR EMERGENCY CHARGING AND LIMITED SUPPLY OF POWER TO ESSENTIAL 12V SERVICES

LOCATIONS TO CONNECT POSITIVE CLAMPS

LOCATIONS TO CONNECT NEGATIVE CLAMPS



SHIP'S SERVICE BATTERY BANK

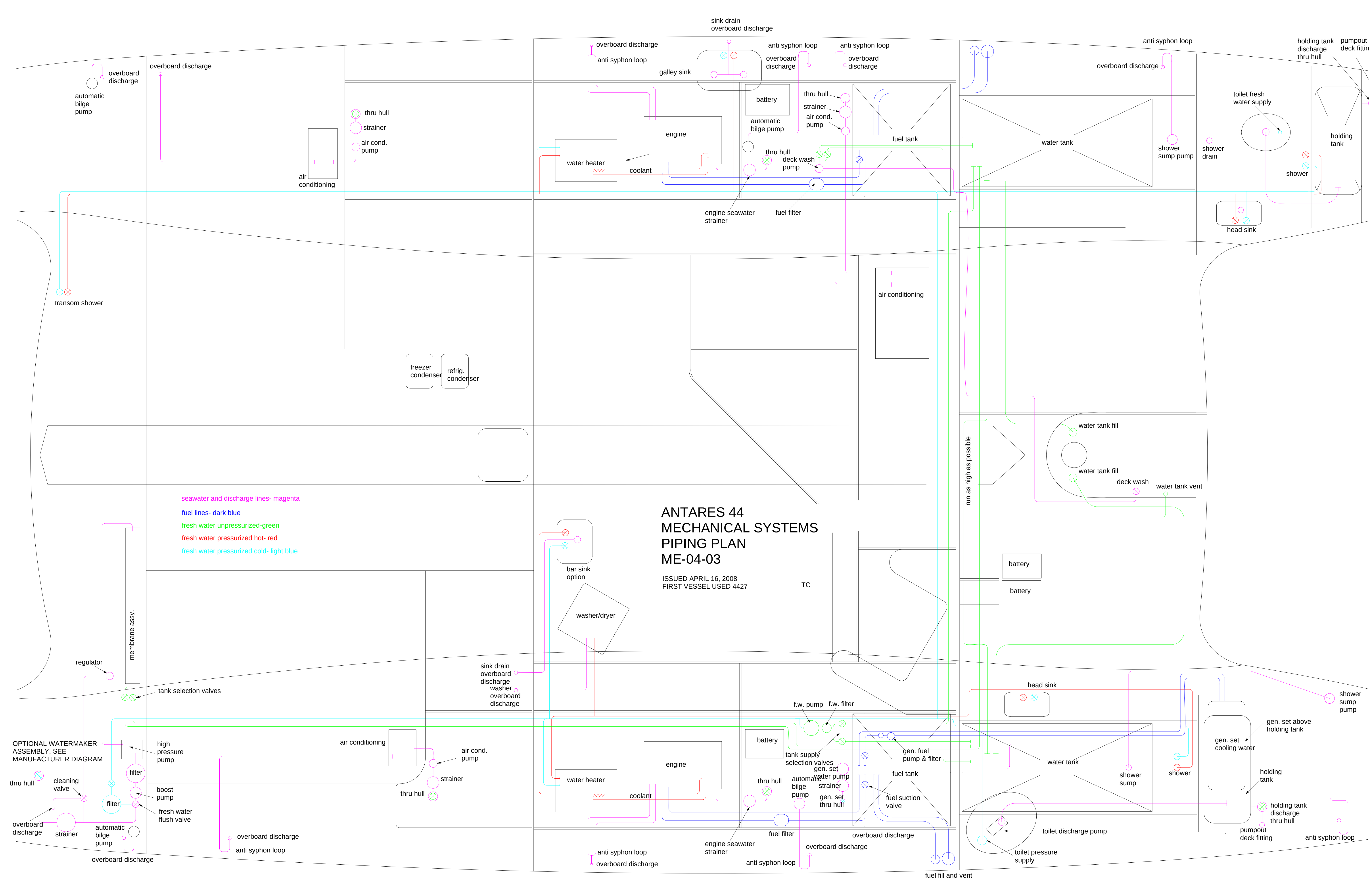


WEST MARINE 6885776
30A. PORTABLE ILLUSTRATED, HAS VOLTAGE CONTROL AND READOUTS

PREFERRED CHARGER IS OF MARINE TYPE WITH FULL VOLTAGE CONTROL TO PERMIT LONG TERM CONNECTION WITHOUT OVERCHARGING AND CONSEQUENT BATTERY DAMAGE.
SIMPLE AUTOMOTIVE CHARGER WILL WORK IF NECCESSARY PROVIDED IT IS DISCONNECTED WHEN FULL CHARGE IS ACHIEVED.

CHARGER PLUGS INTO VESSEL AC VOLTAGE SYSTEM AND REQUIRES THAT POWER BE AVAILABLE FROM THE GEN SET OR SHORE POWER

SEE ALSO:
EL-04-14 POWER FLOW DIAGRAMS
EL-04-18 CHARGE COMBINER
EL-04-19 CHARGER/INVERTER
FOR INTERACTIONS WITH THE VESSEL'S 12 VOLT DC SYSTEMS


ANTARES 44
MECHANICAL SYSTEMS
PIPING PLAN
ME-04-03
ISSUED APRIL 16, 2008
FIRST VESSEL USED 4427
TC
seawater and discharge lines- magenta
fuel lines- dark blue
fresh water unpressurized-green
fresh water pressurized hot- red
fresh water pressurized cold- light blue
sink drain overboard discharge
overboard discharge
anti syphon loop
galley sink
anti syphon loop
overboard discharge
anti syphon loop
overboard discharge
battery
automatic bilge pump
thru hull
strainer
air cond. pump
fuel tank
water tank
anti syphon loop
overboard discharge
holding tank discharge thru hull
pumpout deck fitting
toilet fresh water supply
holding tank
shower
shower sump pump
shower drain
head sink
overboard discharge
automatic bilge pump
overboard discharge
thru hull
strainer
air cond. pump
air conditioning
engine
water heater
coolant
thru hull
deck wash pump
engine seawater strainer
fuel filter
transom shower
air conditioning
freezer condenser
refrig. condenser
water tank fill
water tank fill
deck wash
water tank vent
run as high as possible
bar sink option
washer/dryer
battery
battery
membrane assy.
regulator
tank selection valves
sink drain overboard discharge
washer overboard discharge
head sink
shower sump pump
f.w. pump
f.w. filter
tank supply selection valves
gen. fuel pump & filter
gen. set above holding tank
gen. set cooling water
OPTIONAL WATERMAKER ASSEMBLY, SEE MANUFACTURER DIAGRAM
high pressure pump
filter
boost pump
fresh water flush valve
thru hull
cleaning valve
filter
overboard discharge
strainer
automatic bilge pump
overboard discharge
air conditioning
air cond. pump
strainer
thru hull
overboard discharge
anti syphon loop
water heater
engine
coolant
anti syphon loop
overboard discharge
battery
thru hull
automatic bilge pump
gen. set water pump
strainer
gen. set thru hull
fuel tank
fuel suction valve
water tank
shower sump
shower
holding tank
holding tank discharge thru hull
pumpout deck fitting
anti syphon loop
engine seawater strainer
fuel filter
overboard discharge
overboard discharge
anti syphon loop
fuel fill and vent
toilet discharge pump
toilet pressure supply

PROP INSTALLATION NOTES:

CONFIRM THAT PROP TAPER CONTACTS SHAFT TAPER WITHOUT INTERFERENCE FROM KEY,
TIGHTEN PROP NUT (SHORTER OF TWO),
SEAT PROPELLER BY STRIKING PROP HUB WITH DEAD BLOW TYPE MALLET,
RETIGHTEN PROP NUT,
INSTALL SECOND NUT TIGHT AGAINST FIRST,
INSTALL COTTER PIN,
INSTALL ZINC ANODE 4" AHEAD OF STRUT BEARING

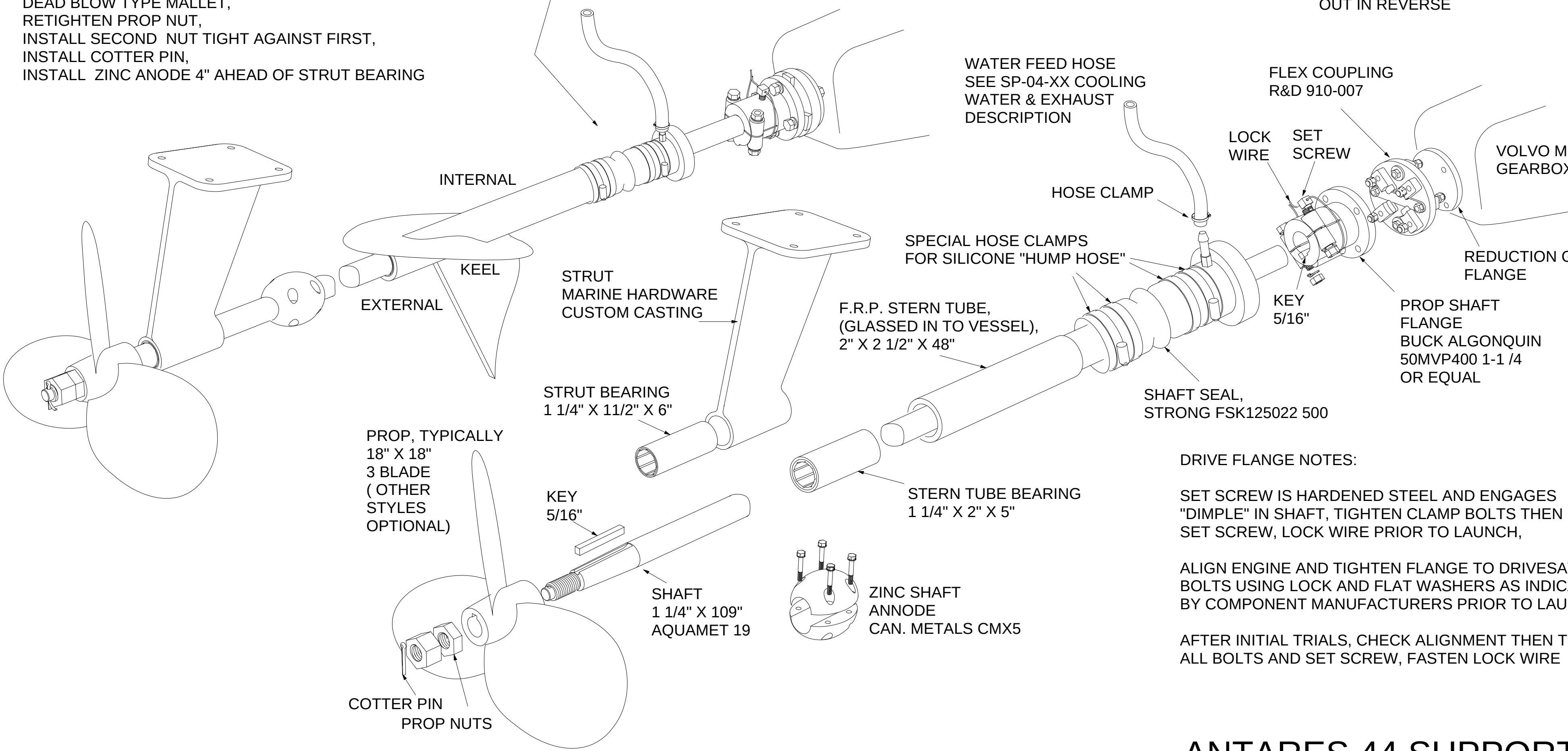
INSTALL AND MAINTAIN SHAFT SEAL IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS

ALL COMPONENTS ARE INSTALLED BELOW WATER LINE !

BEFORE LAUNCH, TIGHTEN ALL HOSE CLAMPS,

DRIVE FLANGES ARE SUBJECT TO FULL FOREWARD AND REVERSE THRUST !

CLAMP BOLTS AND SET SCREW ARE ALL THAT SECURES SHAFT FROM PULLING OUT IN REVERSE



DRIVE FLANGE NOTES:

SET SCREW IS HARDENED STEEL AND ENGAGES "DIMPLE" IN SHAFT, TIGHTEN CLAMP BOLTS THEN SET SCREW, LOCK WIRE PRIOR TO LAUNCH,

ALIGN ENGINE AND TIGHTEN FLANGE TO DRIVESAVER BOLTS USING LOCK AND FLAT WASHERS AS INDICATED BY COMPONENT MANUFACTURERS PRIOR TO LAUNCH

AFTER INITIAL TRIALS, CHECK ALIGNMENT THEN TIGHTEN ALL BOLTS AND SET SCREW, FASTEN LOCK WIRE

SHAFT BEARINGS ARE "CUTLESS" TYPE AND ARE LINED WITH FLUTED RUBBER. CLEARANCE IS LARGE AND MAY BE UP TO .075" BEFORE RENEWAL. FISHING LINE WRAPS WILL DAMAGE RUBBER INSERT, ROPE WRAPS MAY DAMAGE BEARING AND TUBE ASSEMBLY

INSPECT ALL INTERNAL COMPONENTS PRIOR TO DEPARTURE AND AT INTERVALS WHILE RUNNING, SHAFT SEAL, ZINC ANNODES AND DRIVE COMPONENTS ARE REGULAR MAINTENANCE ITEMS

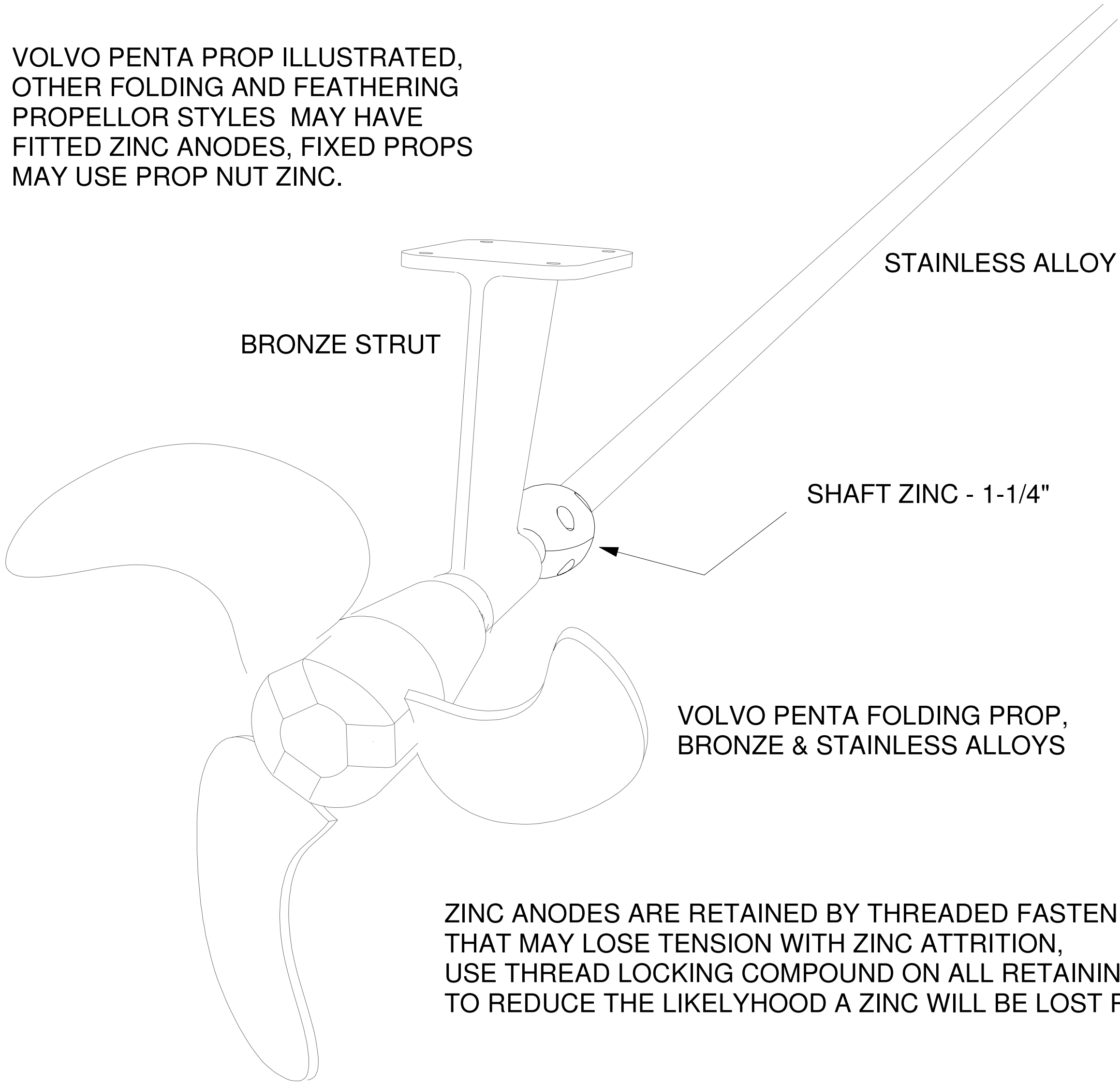
ANTARES 44 SUPPORT SHAFT LINE COMPONENTS ME-04-10

ISSUED APRL 14, 2008
FIRST VESSEL USED 44XX

TC

DRAWING FOR VOLVO D2-40

VOLVO PENTA PROP ILLUSTRATED, OTHER FOLDING AND FEATHERING PROPELLOR STYLES MAY HAVE FITTED ZINC ANODES, FIXED PROPS MAY USE PROP NUT ZINC.



ZINC ANODES ARE RETAINED BY THREADED FASTENERS THAT MAY LOSE TENSION WITH ZINC ATTRITION, USE THREAD LOCKING COMPOUND ON ALL RETAINING SCREWS TO REDUCE THE LIKELYHOOD A ZINC WILL BE LOST PREMATURELY

ZINC ANODES ARE SACRIFICAIL AND ARE EXPECTED TO ERODE AWAY, THEREBY PROTECTING THE SURROUNDING METALS FROM ANY CORROSION THAT MAY OTHERWISE RESULT FROM THE IMMERSION OF METALS WITH DIFFERENT ELECTROLYTIC PROPERTIES IN AN ELECTROLYTE (SEAWATER).

THE ZINC LONGEVITY WILL VARY ACCORDING TO THE QUANTITY OF PROTECTED METAL AND THE ENVIRONMENTAL CONDITIONS INCLUDING; WATER TEMPERATURE, SALINITY, POLLUTANTS, NEARBY METALLIC OBJECTS AND NEIGHBOURING BOAT OR SHORE ELECTRICAL INSTALLATIONS.

THIS IS NOT A PREDICATABLE SERVICE INTERVAL. CHECK ZINCS FREQUENTLY, CARRY REPLACEMENTS AND CHANGE AS NEEDED

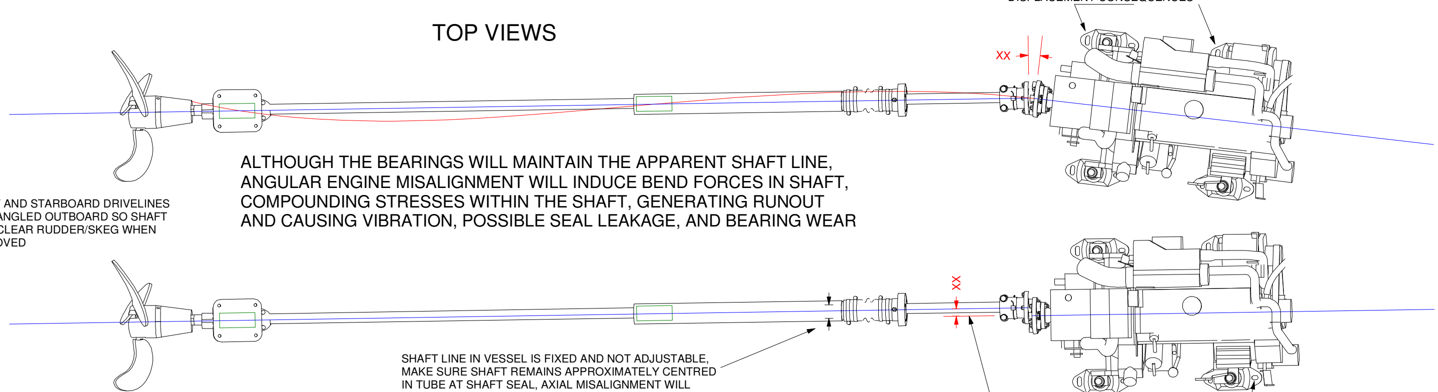
EVERY EFFORT HAS BEEN MADE TO ENSURE THAT HIGH QUALITY COMPATIBLE MARINE ALLOYS ARE USED FOR THE IMMERSED EQUIPMENT. SOME DEGREE OF STAINING, PITTING AND EROSION IS HOWEVER INEVITABLE AS THE ALLOYS THEMSELVES ARE MIXTURES OF METALS. KEEPING THE ZINCS SOUND WILL MINIMISE SUCH ACTION AND PROLONG THE LIFE OF THE UNDERWATER GEAR INDEFINITELY

ANTARES 44 SUPPORT
ZINC ANODE SERVICE
SP-04-09

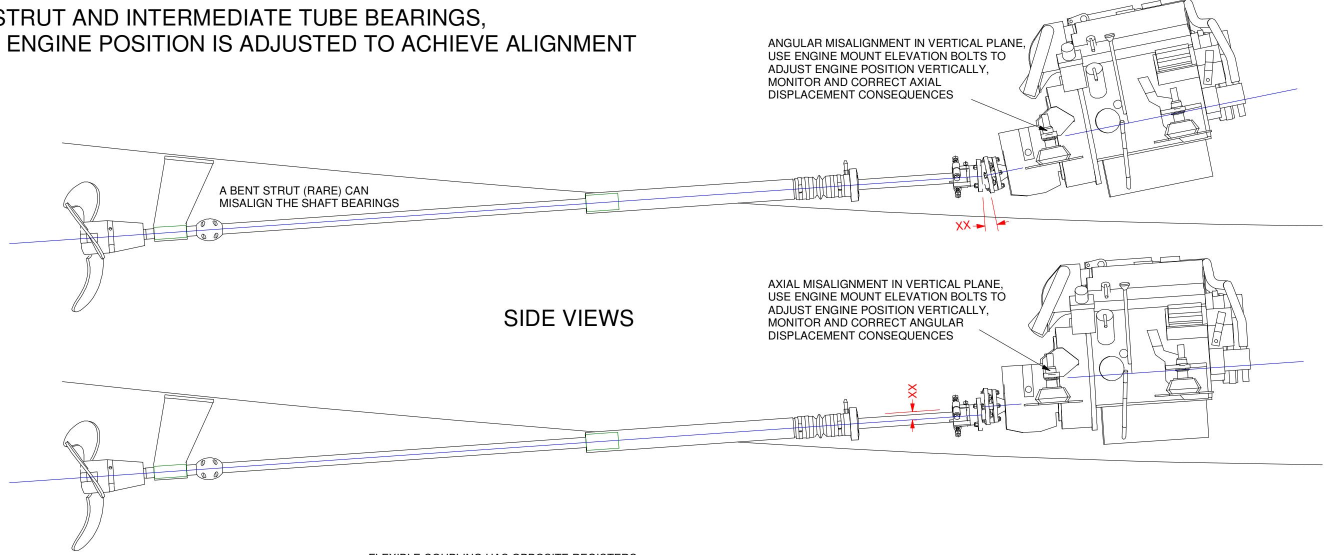
ISSUED MARCH 29, 2011
FIRST VESSEL USED 44XX

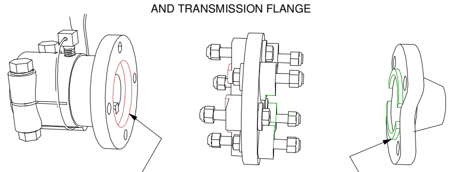
TC

TOP VIEWS

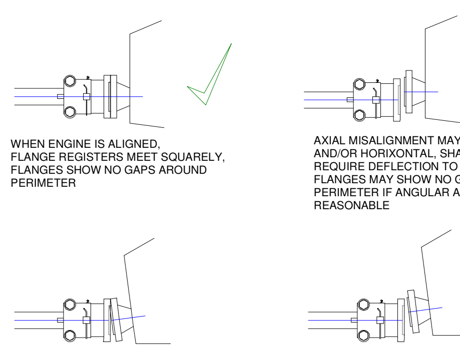


NOTE;
CORRECT SHAFT POSITION IS PERMANENTLY ESTABLISHED BY STRUT AND INTERMEDIATE TUBE BEARINGS,
THE ENGINE POSITION IS ADJUSTED TO ACHIEVE ALIGNMENT



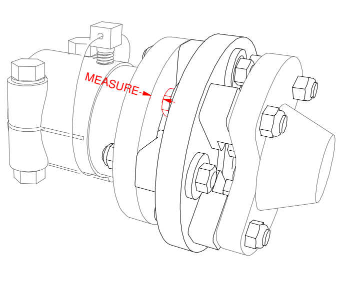


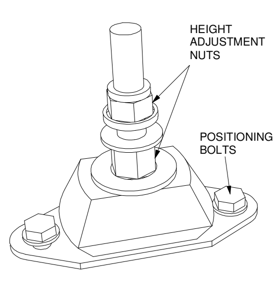
TYPES OF ENGINE MIS-ALIGNMENT



A FLEXIBLE COUPLING WILL TOLERATE SOME MINOR ANGULAR MISALIGNMENT, R&D MODEL ILLUSTRATED WILL ACCEPT A .010" DIFFERENCE IN THE CLEARANCE BETWEN THE RED PAINTED BOLT HEAD AND FLANGE FACE, MEASURED IN FOUR POSITIONS AS THE COUPLING IS ROTATED. THIS CAN BE MEASSURED WITHOUT DISCONNECTING THE FLANGES. SEE ALSO THE R&D LITERATURE.

FOR SMOOTHEST RUNNING EVERY ATTEMPT SHOULD BE MADE TO ACHIEVE THE MOST ACCURATE ALIGNMENT REGARDLESS OF THE COUPLING TOLERANCE.





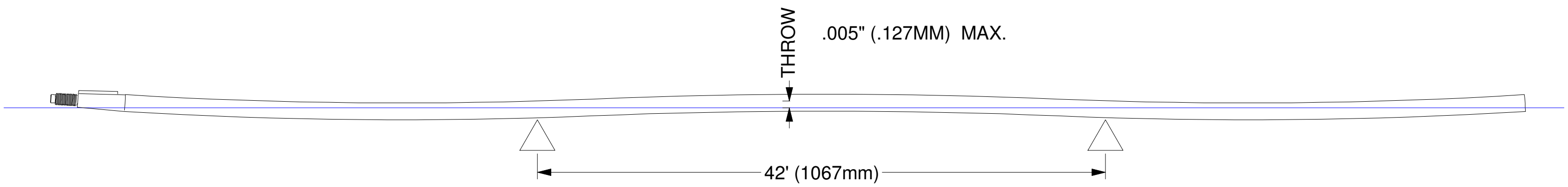
ENGINE MOUNT POSITIONING BOLTS AND HEIGHT ADJUSTMENT NUTS MAY WORK LOOSE RESULTING IN MISALIGNMENT.
CHECK ALL DRIVELINE FASTENERS FOR TIGHTNESS AT REGULAR INTERVALS.

ANTARES 44 SUPPORT
DRIVELINE SERVICE
SP-04-10
SHEET 1 OF 2

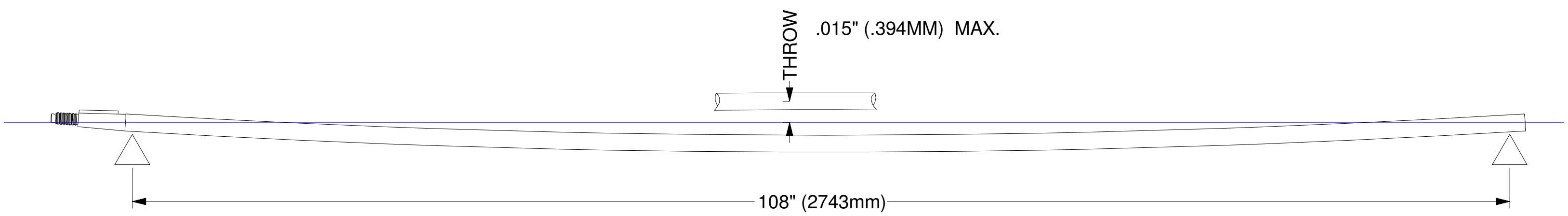
ISSUED MARCH 29, 2011
FIRST VESSEL USED 44XX

TC

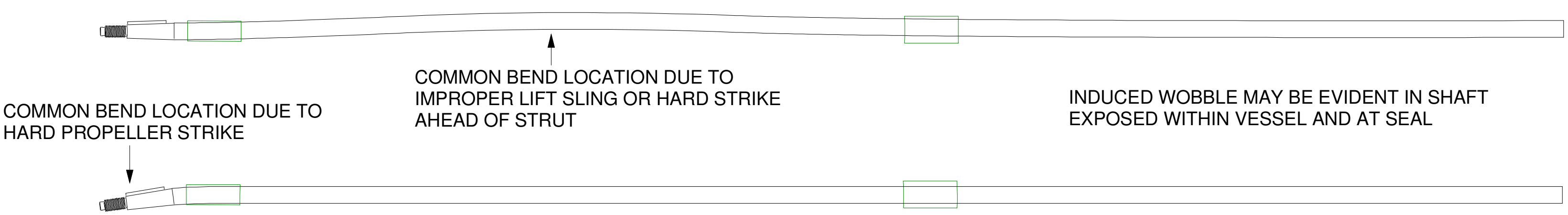
NEW SHAFT STRAIGHTNESS TOLERANCE GUIDELINES



NEW SHAFT RUNOUT TOLERANCE PER ABYC STANDARD,
(USUALLY .005" (.127MM) OR BETTER BY SHAFT MANUFACTURER'S STANDARD)

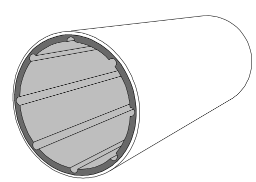


IF THEY GET BENT



NOTE:
RUNOUT DUE TO A BENT SHAFT OR DAMAGED COUPLING IS READILY APPARENT WHEN ROTATED BY HAND, MIS-ALIGNMENT INDUCED RUNOUT IS NOT

BEARINGS ARE COMPOSED OF BRONZE OUTER SHELL AND INNER GROOVED RUBBER ELEMENT. FIT TO SHAFT IS NEVER TIGHT, A MINIMUM RUNNING CLEARANCE OF .011" (3MM) IS REQUIRED TO PERMIT FLUID INTERFACE. NORMAL LONGEVITY IS SEVERAL SEASONS.
REPLACE BY REMOVING SHAFT AND CUTTING THROUGH BEARING SHELL LONGITUDINALLY FROM THE INSIDE WITH HACKSAW BLADE. NEW BEARING PRESSES IN.

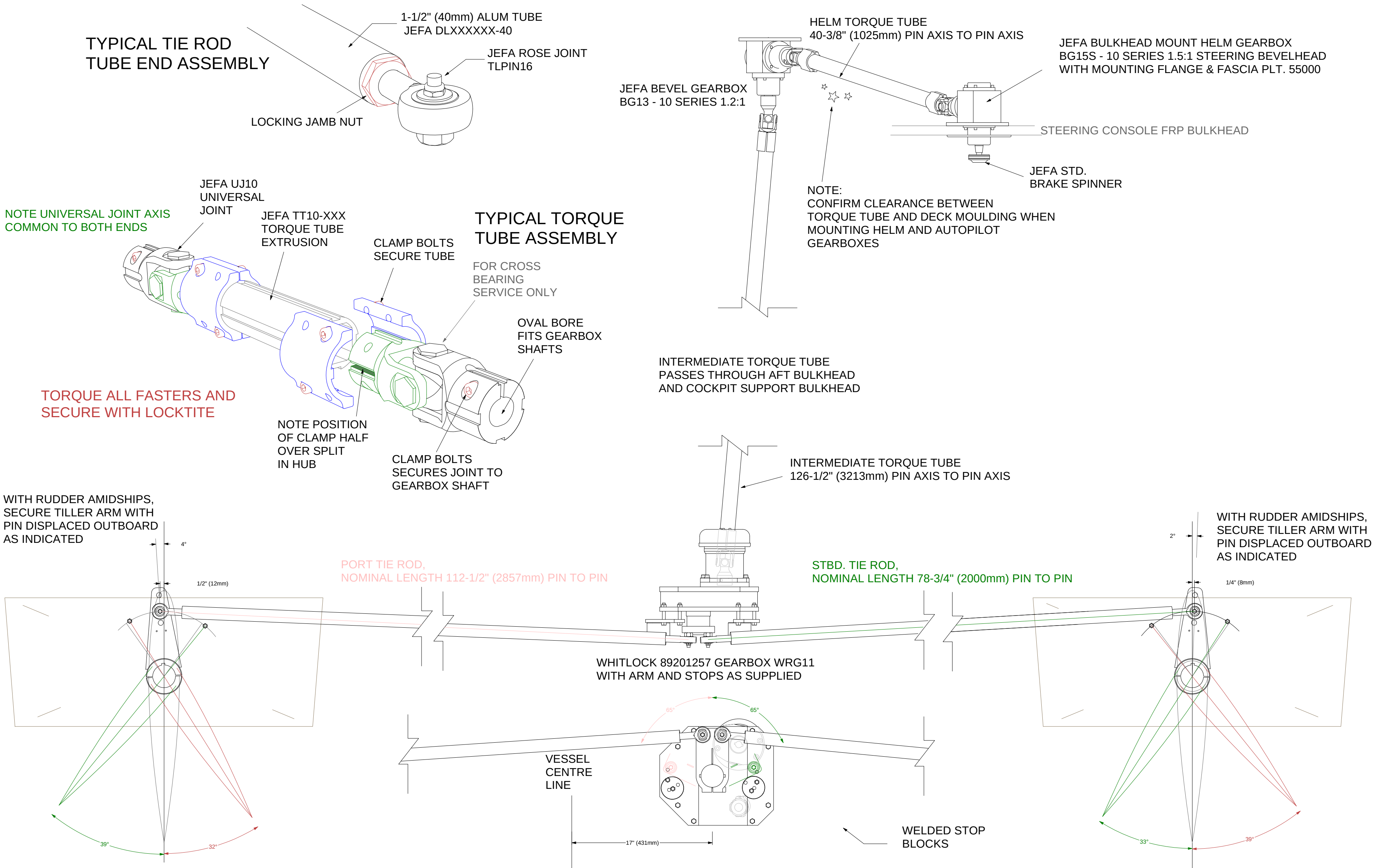


BEARINGS MAY BE QUICKLY DAMAGED BY FISHING LINE WRAP, RUBBER INSERT WILL BE CUT AWAY CREATING EXCESSIVE CLEARANCE AND VIBRATION.

ANTARES 44 SUPPORT
DRIVELINE SERVICE
SP-04-10
SHEET 2 OF 2

ISSUED MARCH 29, 2011
FIRST VESSEL USED 44XX

TC



GEARBOX STOP PLATES
VIEW LOOKING FORWARD

IN A TURN, THE INSIDE RUDDER HAS SMALLER TURNING RADIUS THAN THE OUTSIDE RUDDER, APPROXIMATELY CORRESPONDING TO THE VESSEL'S TURNING CENTRE.

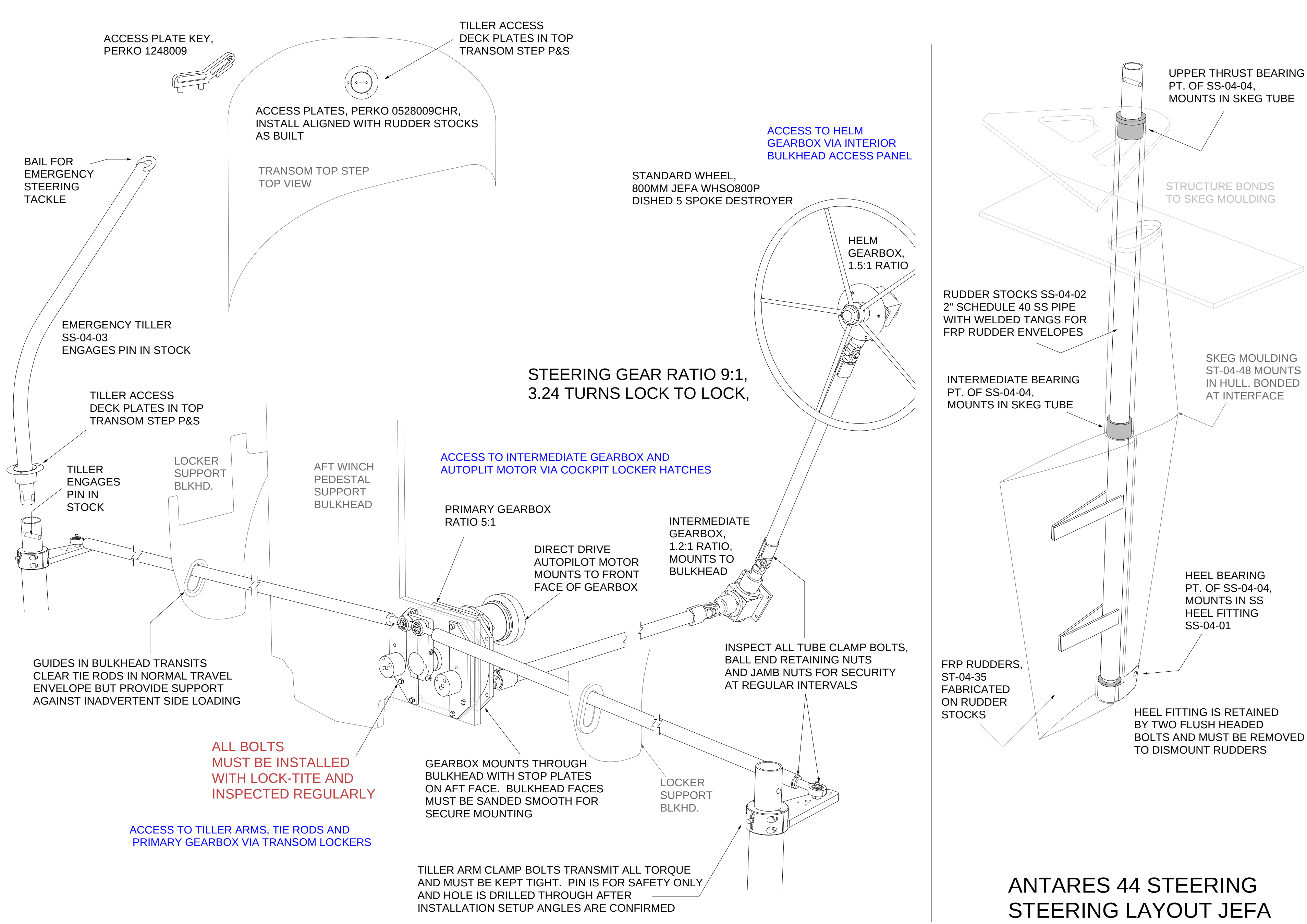
TO ACCOMODATE THIS, 6-7 DEG. OF ACKERMAN ANGLE IS ACHIEVED WITH TILLER ARMS INSTALLED AT AN OUTBOARD ANGLE IN RELATION TO MIDSHIPS RUDDERS AND GEARBOX ARM CONFIGURED AS SUPPLIED.

CONFIRM ALL DIMENSIONS FOR TORQUE TUBES AND TIE RODS ON VESSEL AS BUILT.

ANTARES 44 STEERING
STEERING LAYOUT JEFA
SS-04-08
SHEET 1 OF 2

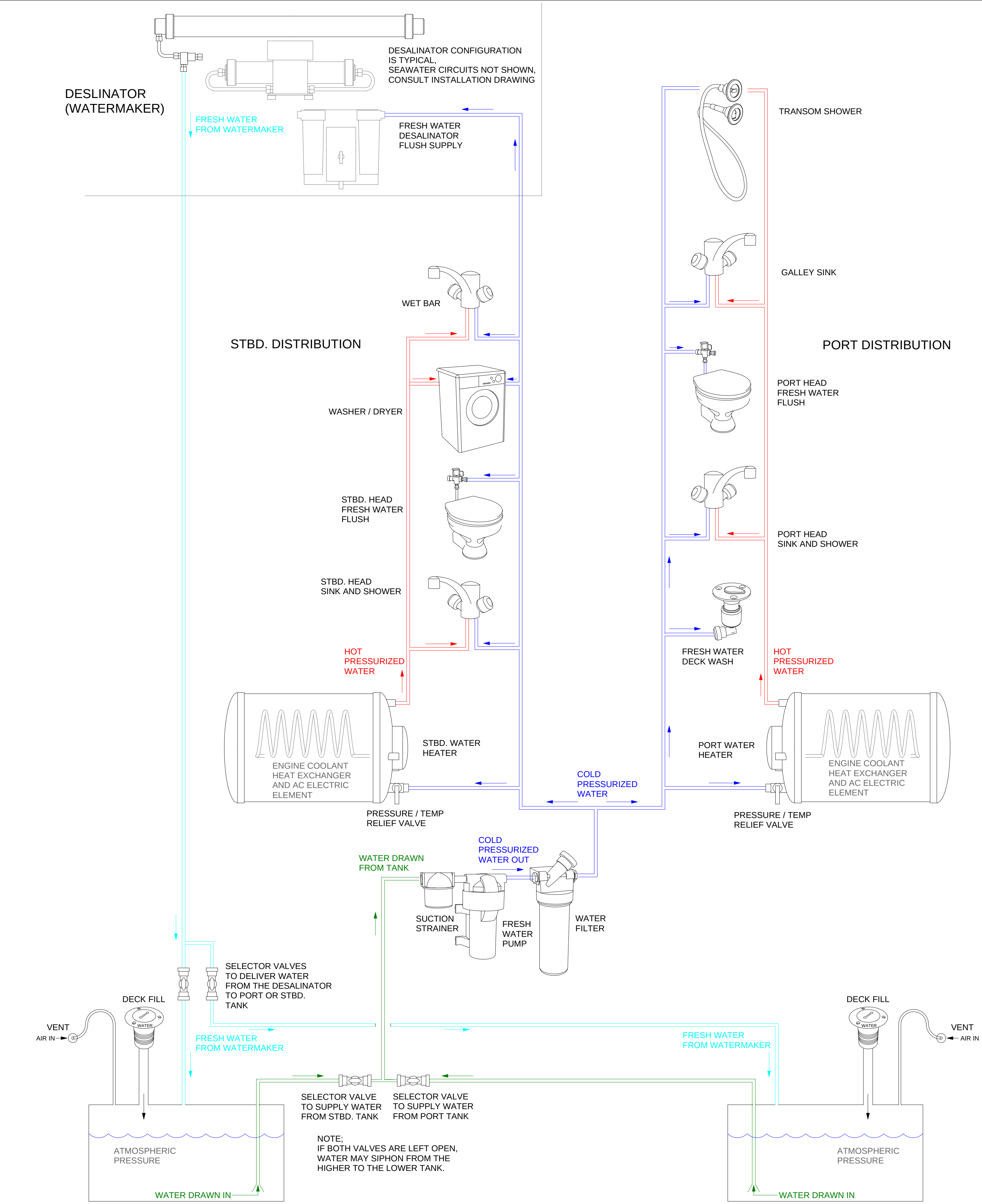
ISSUED NOV. 10, 2010
FIRST VESSEL USED 4437

T.C.



ANTARES 44 STEERING
STEERING LAYOUT JEFA
SS-04-08
SHEET 2 OF 2

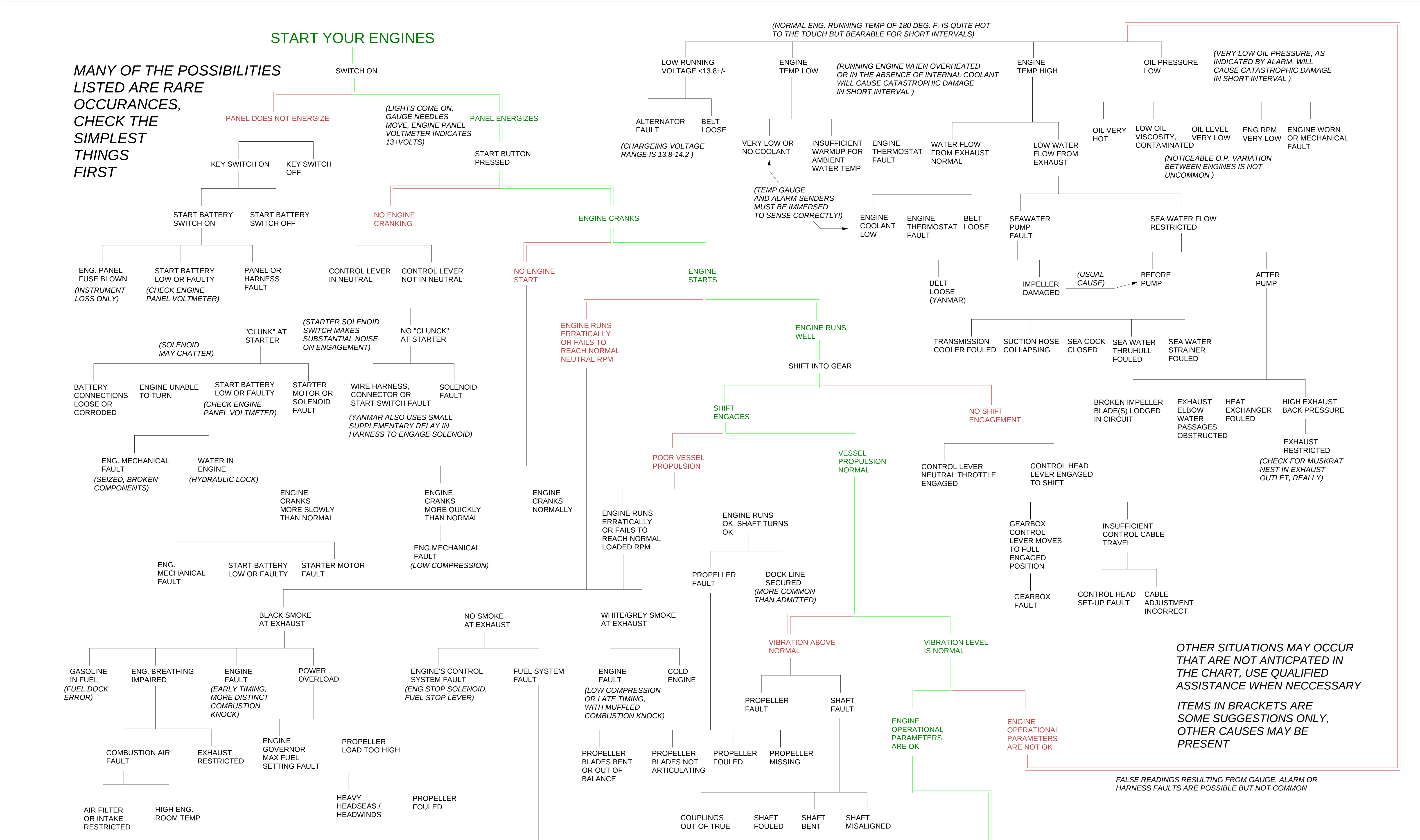
ISSUED NOV. 10, 2010
FIRST VESSEL USED 4437



DRAWING MAY SHOW OPTIONAL EQUIPMENT
NOT INSTALLED ON EVERY VESSEL

ANTARES 44i MECHANICAL SYSTEMS
FRESH WATER PIPING DIAGRAM

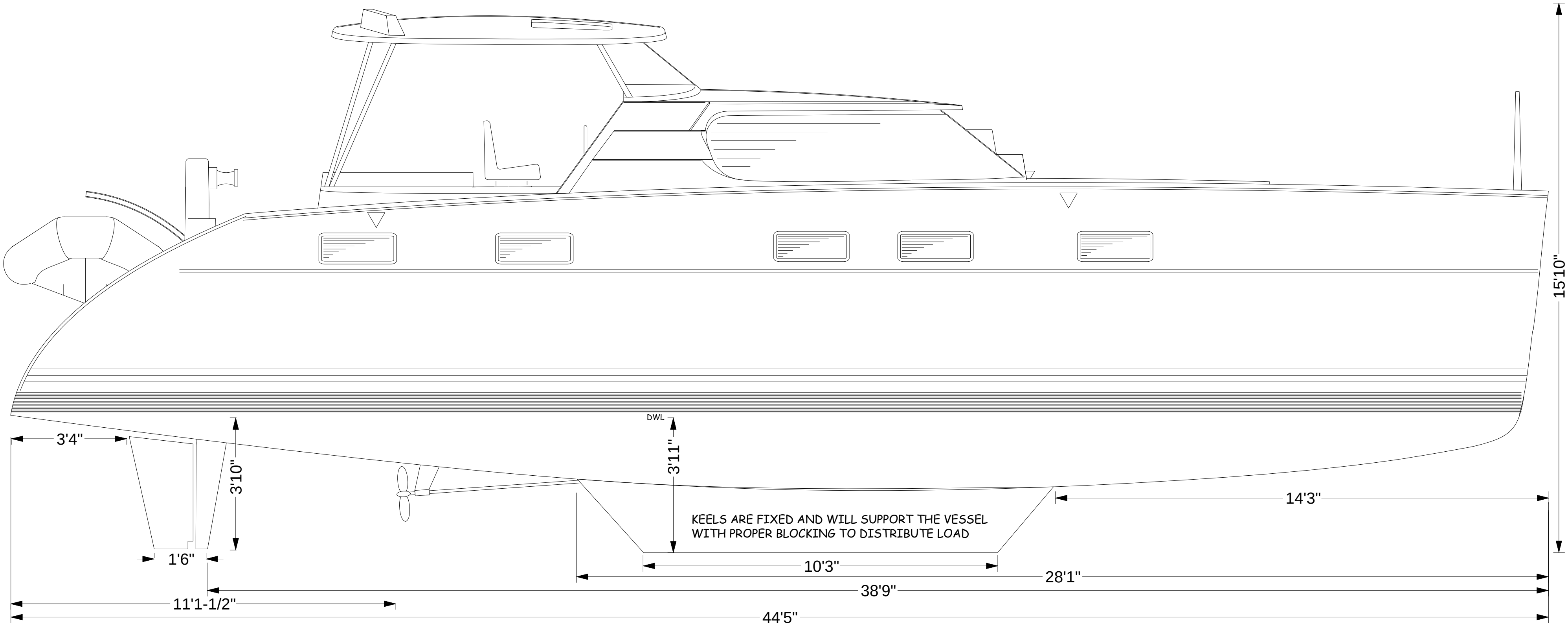
ME-04-13
ISSUED OCT. 16, 2008
FIRST VESSEL USED 4430 TC



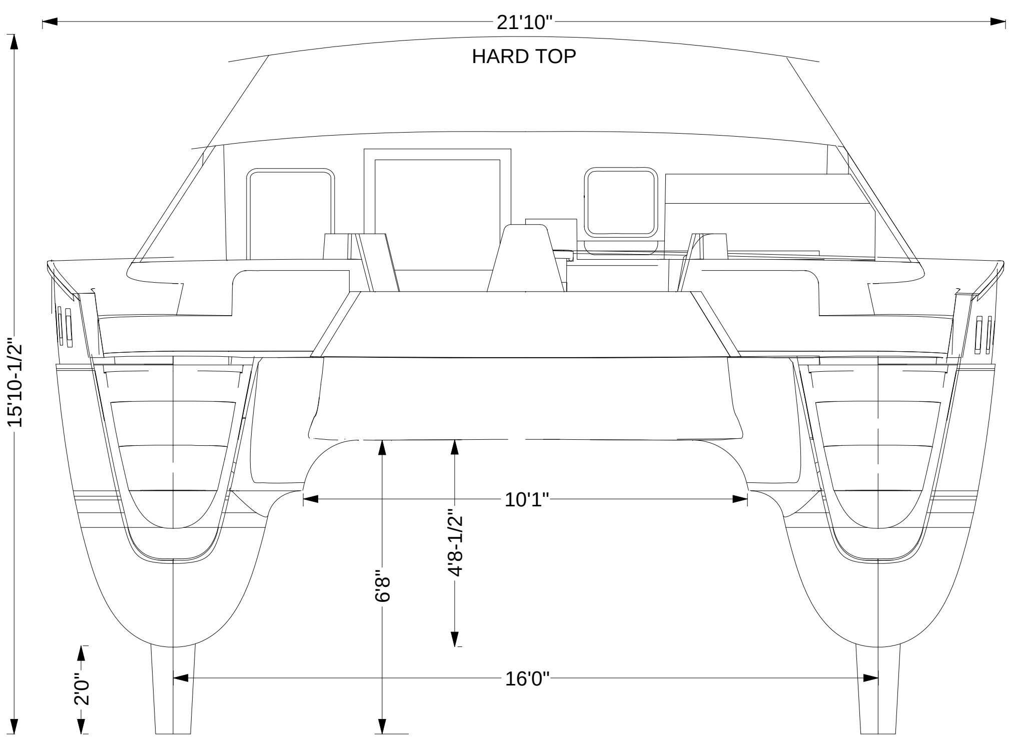
ANTARES 44 MECHANICAL PROPULSION DIAGNOSTIC CHART ME-04-16

ISSUED JUNE 5, 2009

TC

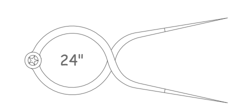


VESSEL WEIGHT IS APPROXIMATELY 12 TONNES
IN CRUISING CONDITION



Antares
YACHTS

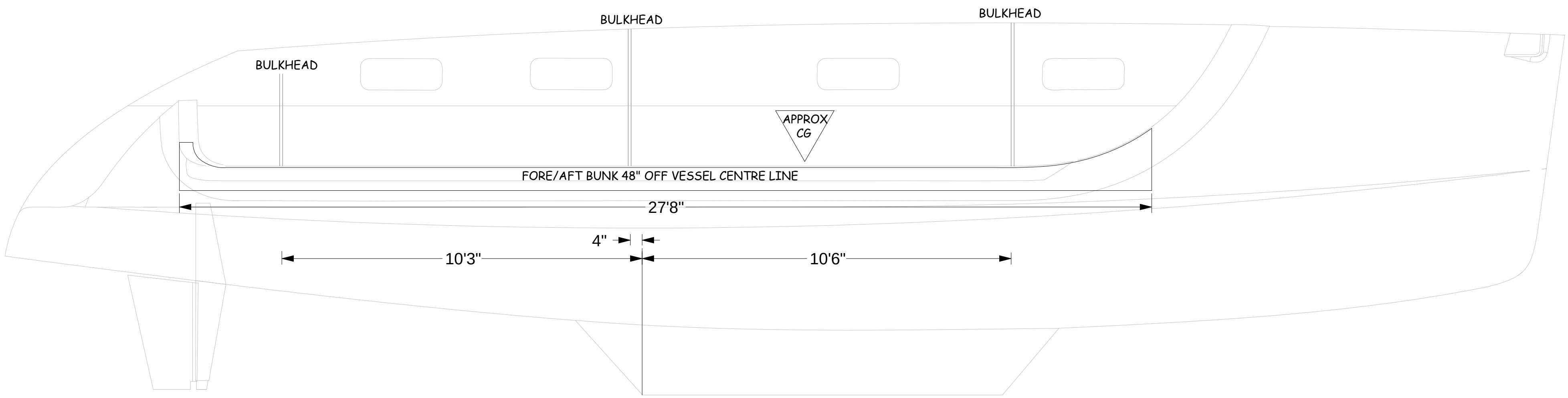
44 DRY DOCKING PLAN

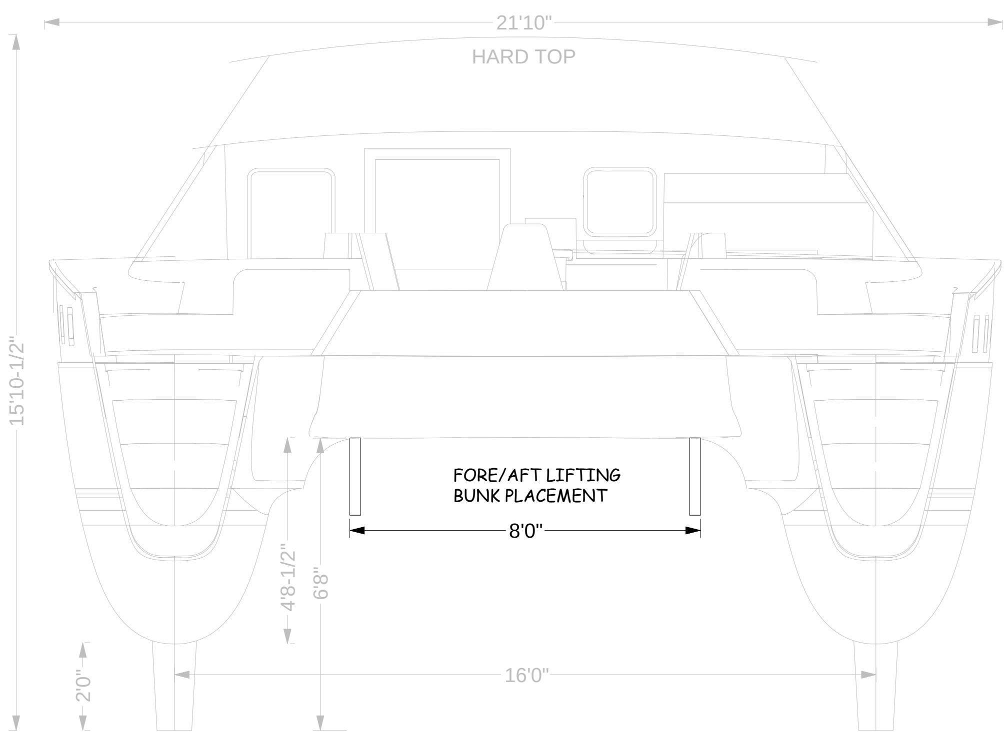


SHEET 1 OF 2

ANTARES DOCUMENT GA-04-06
ISSUED APR. 10, 2008

TC

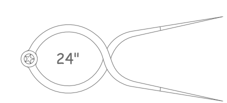




SUPPLEMENTARY INFORMATION FOR TRANSPORT BY BRIDGE DECK SUPPORT

BLOCK VESSEL AS PER SHEET 1 WHEN IN POSITION

Antares YACHTS



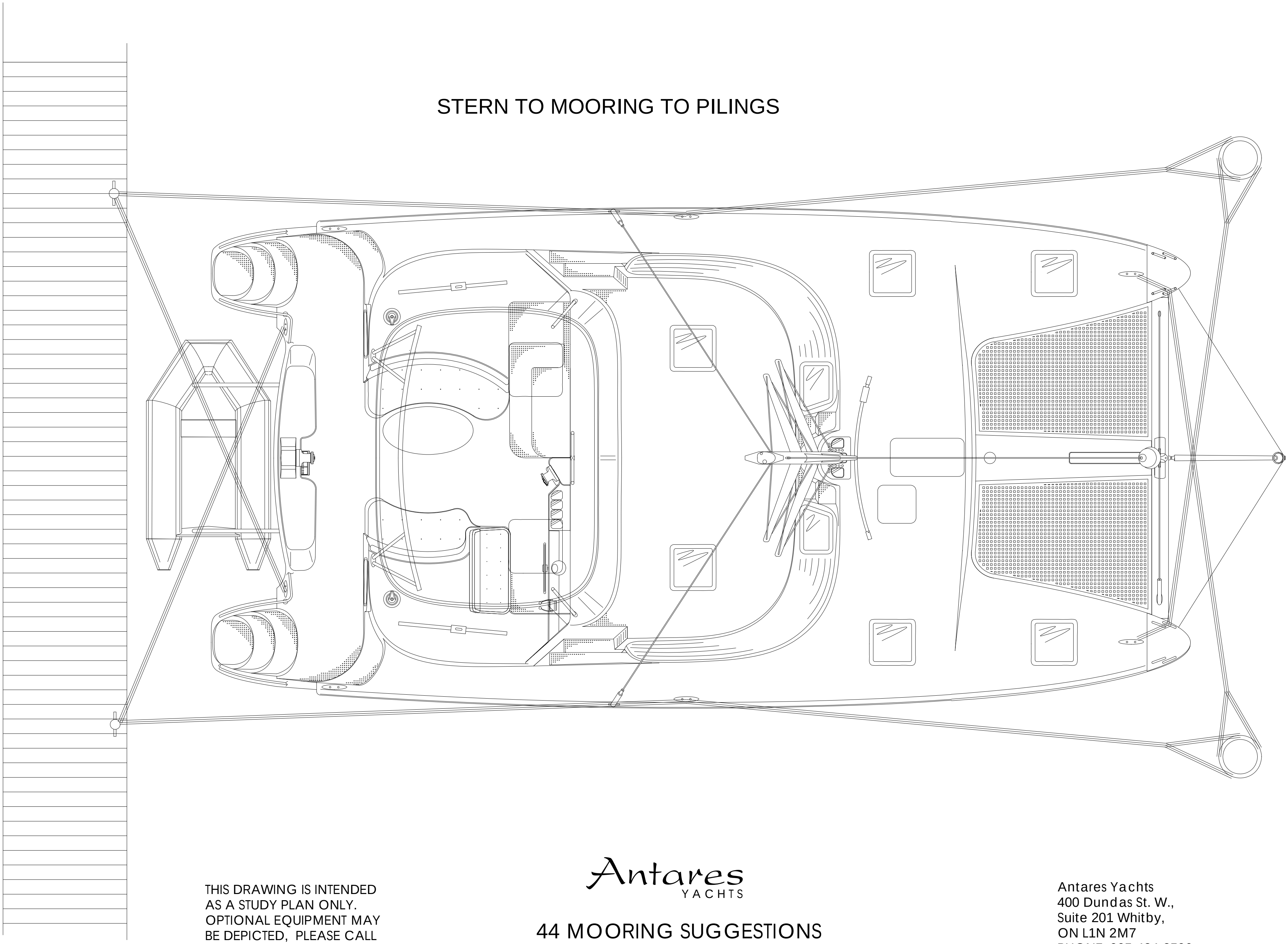
44 DRY DOCKING PLAN

SHEET 2 OF 2

ANTARES DOCUMENT GA-04-06
ISSUED APR. 10, 2008

TC

STERN TO MOORING TO PILINGS



Antares
YACHTS

44 MOORING SUGGESTIONS

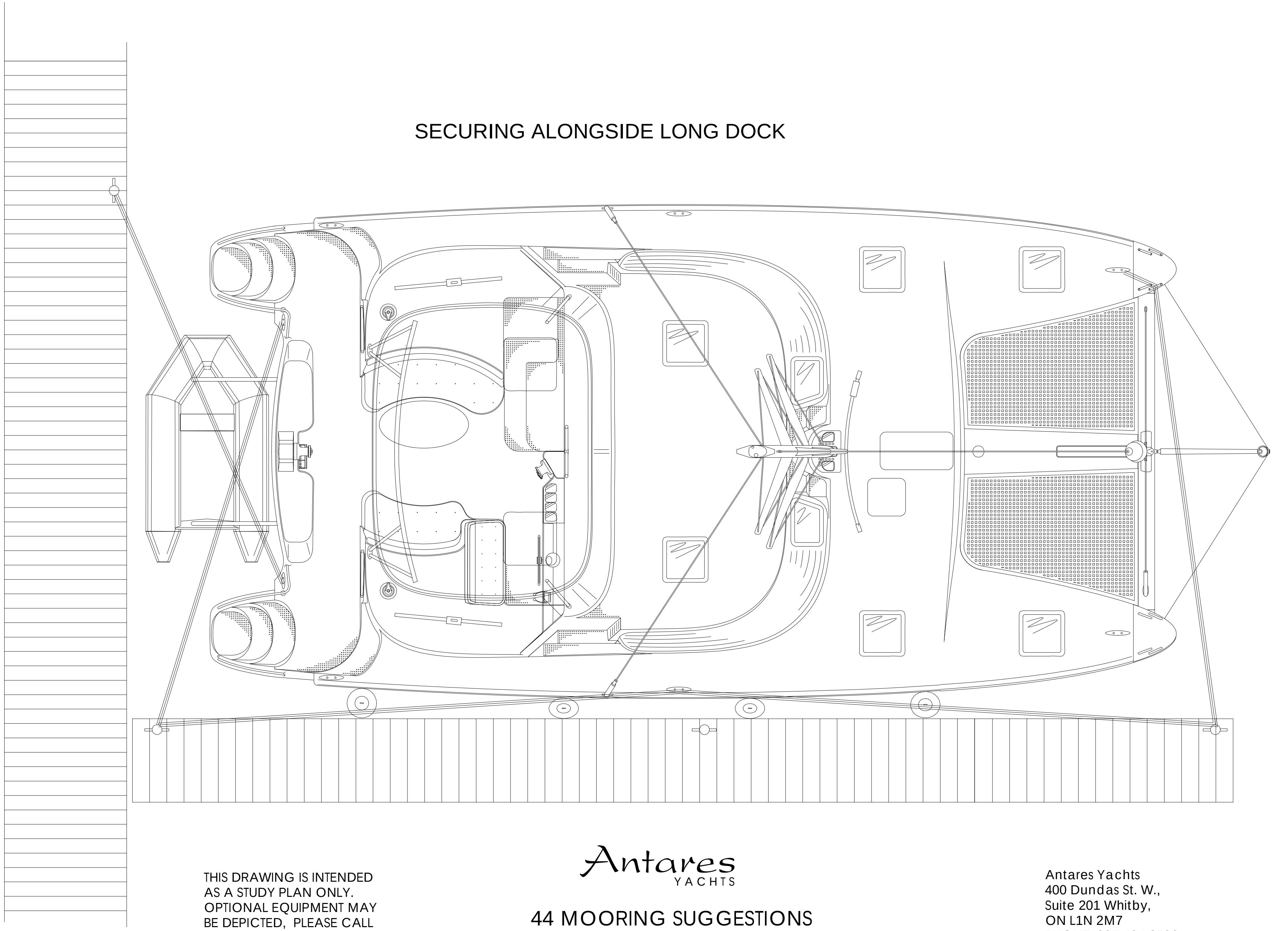
THIS DRAWING IS INTENDED
AS A STUDY PLAN ONLY.
OPTIONAL EQUIPMENT MAY
BE DEPICTED, PLEASE CALL
TO CONFIRM YOUR VESSEL
SPECIFICATIONS

Antares Yachts
400 Dundas St. W.,
Suite 201 Whitby,
ON L1N 2M7
PHONE: 905-424-2596

Web www.liveantares.com
E-mail us: info@liveantares.com

GA-04-07

SECURING ALONGSIDE LONG DOCK



Antares
YACHTS

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AS A STUDY PLAN ONLY.
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SPECIFICATIONS

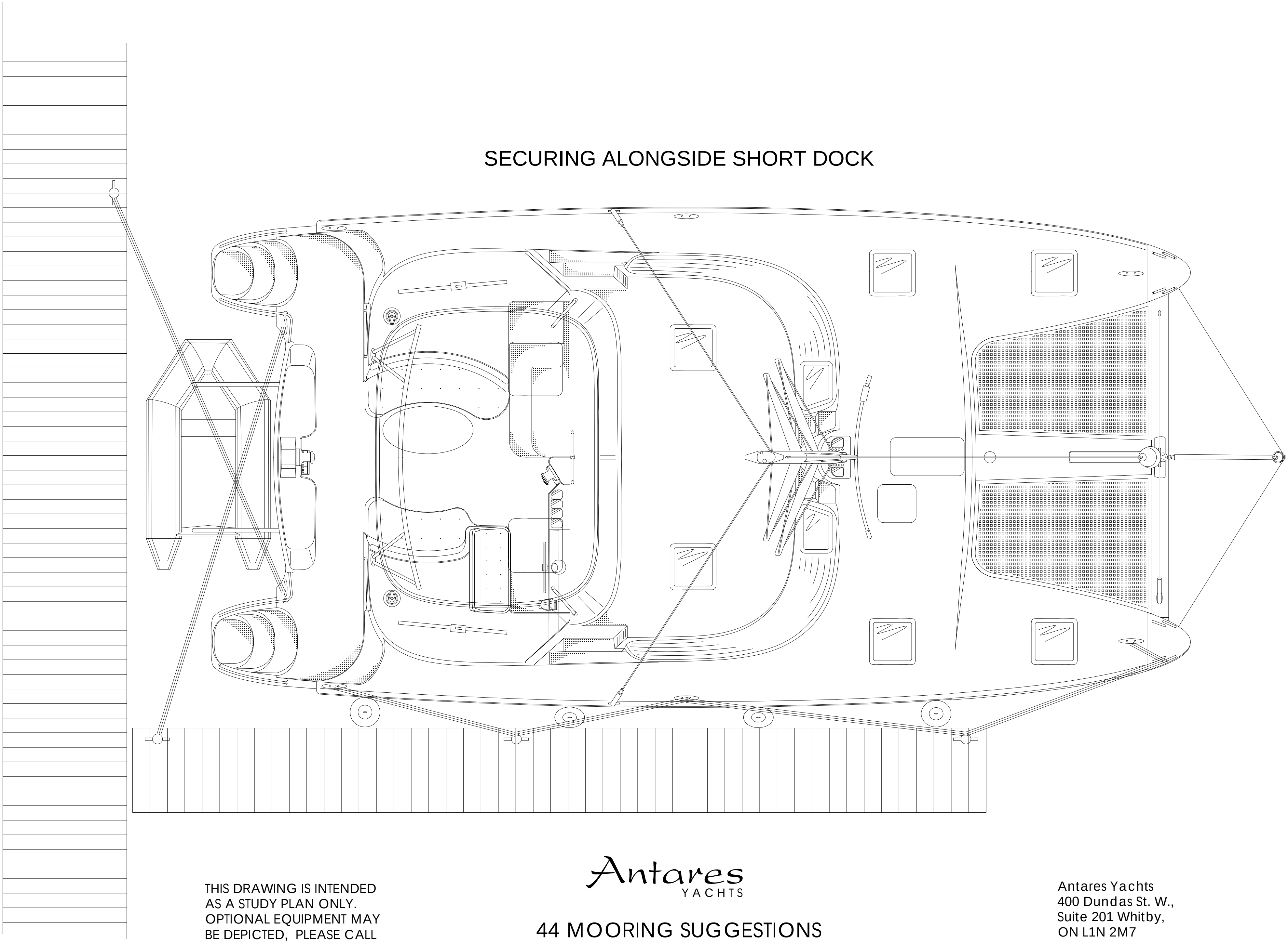
44 MOORING SUGGESTIONS

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Web www.liveantares.com
E-mail us: info@liveantares.com

GA-04-07

SECURING ALONGSIDE SHORT DOCK



Antares
YACHTS

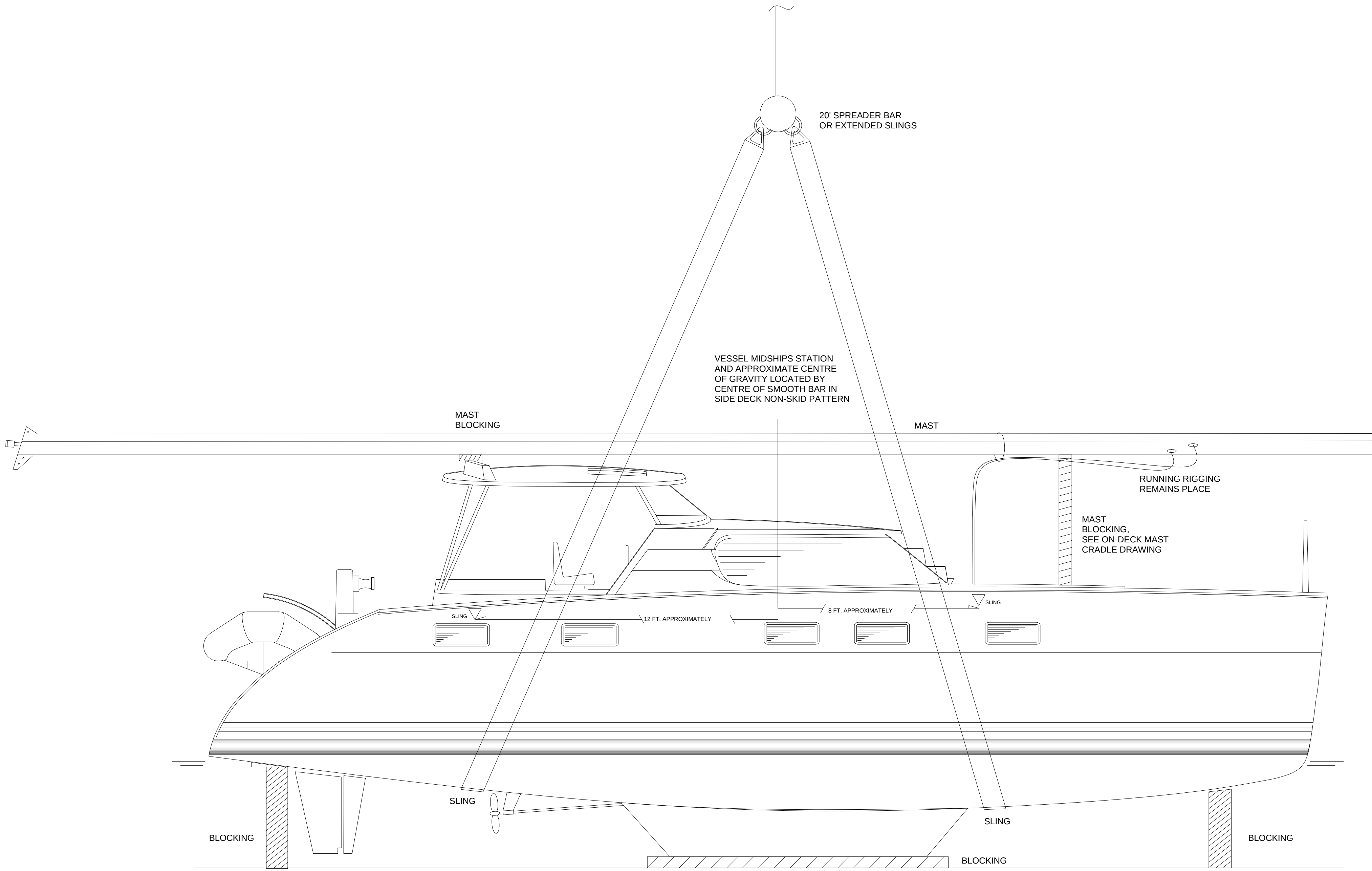
THIS DRAWING IS INTENDED
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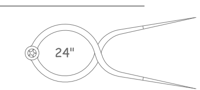
44 MOORING SUGGESTIONS

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GA-04-07

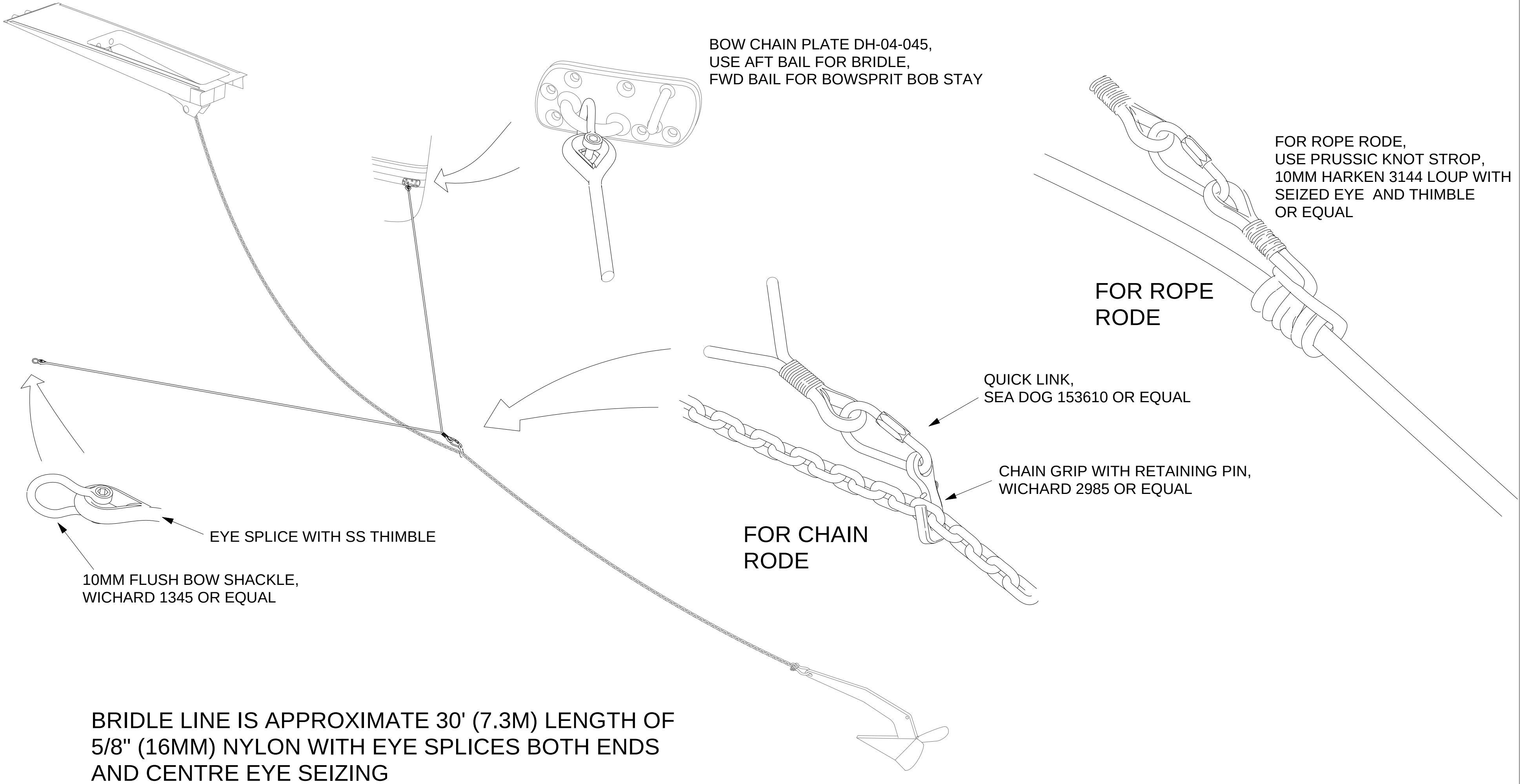




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44 LIFTING AND STORAGE

ANTARES DOCUMENT GA-04-08 TC
ISSUED APR. 10, 2008



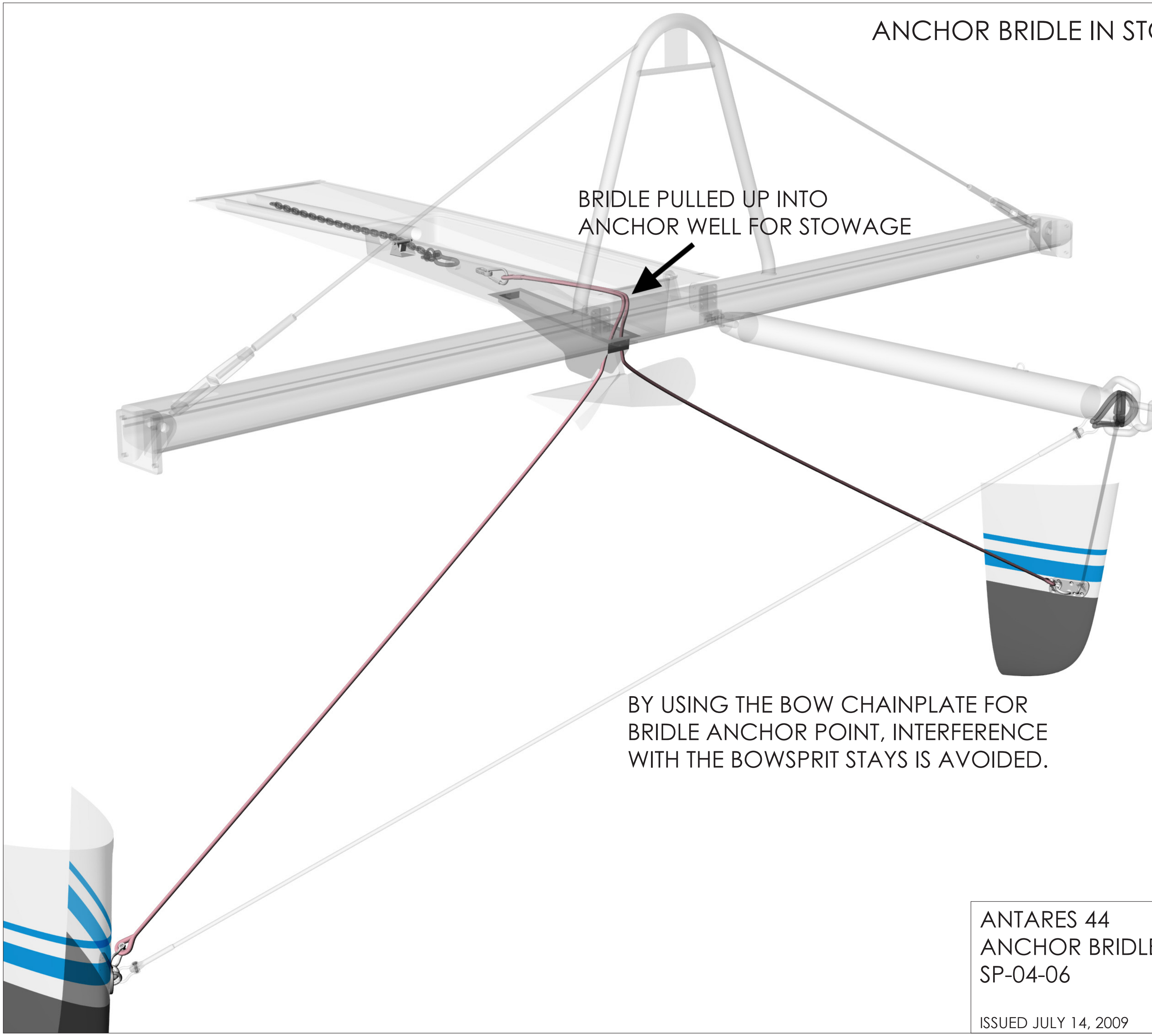
BRIDLE LINE IS APPROXIMATE 30' (7.3M) LENGTH OF
5/8" (16MM) NYLON WITH EYE SPLICES BOTH ENDS
AND CENTRE EYE SEIZING

ANTARES 44 DECK HARDWARE
ANCHOR BRIDLE ASSEMBLY
DH-05-46

ISSUED APRIL 7, 2009
FIRST VESSEL USED 4431

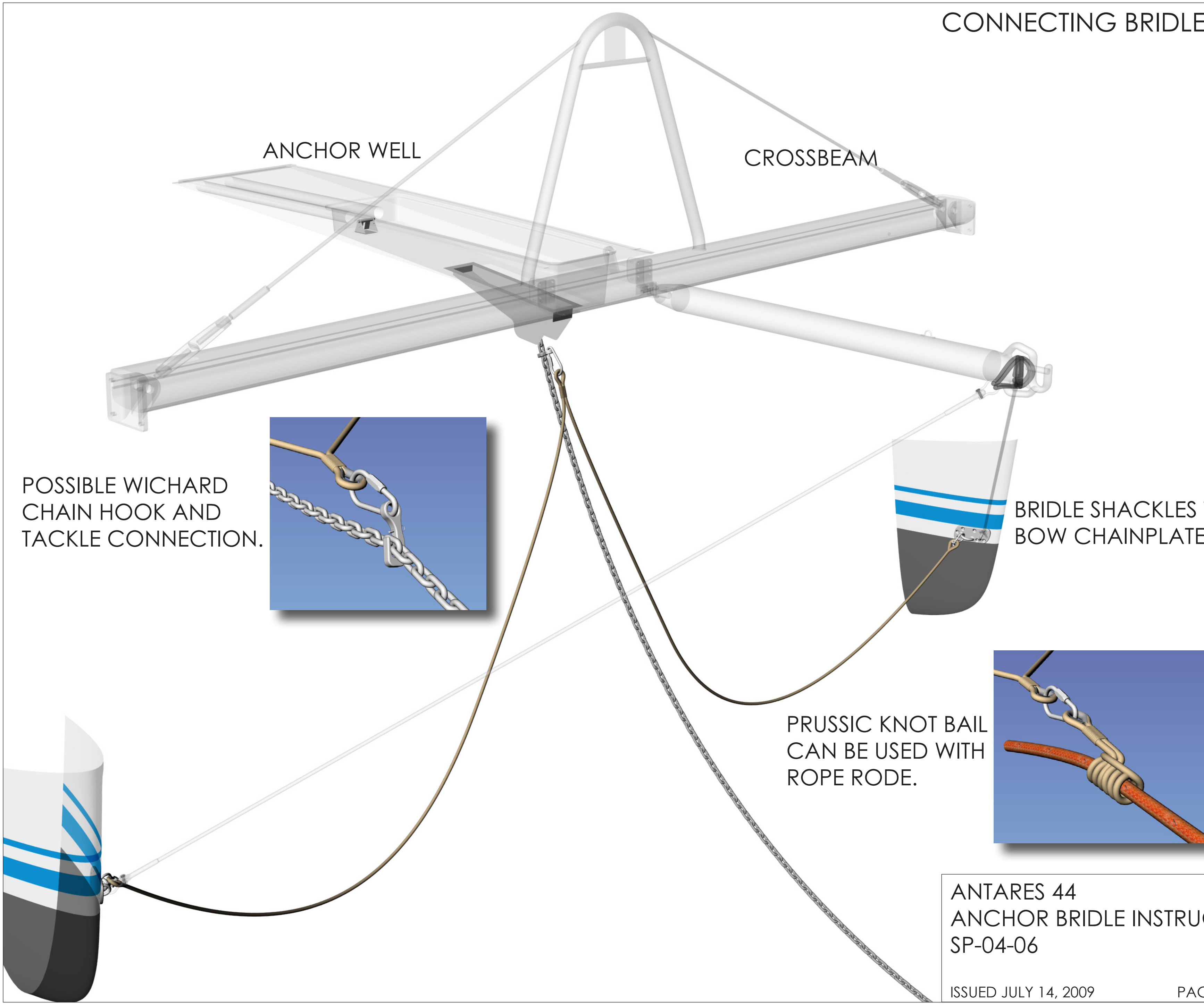
TC

ANCHOR BRIDLE IN STOWED POSITION



ANTARES 44
ANCHOR BRIDLE INSTRUCTION
SP-04-06

ISSUED JULY 14, 2009

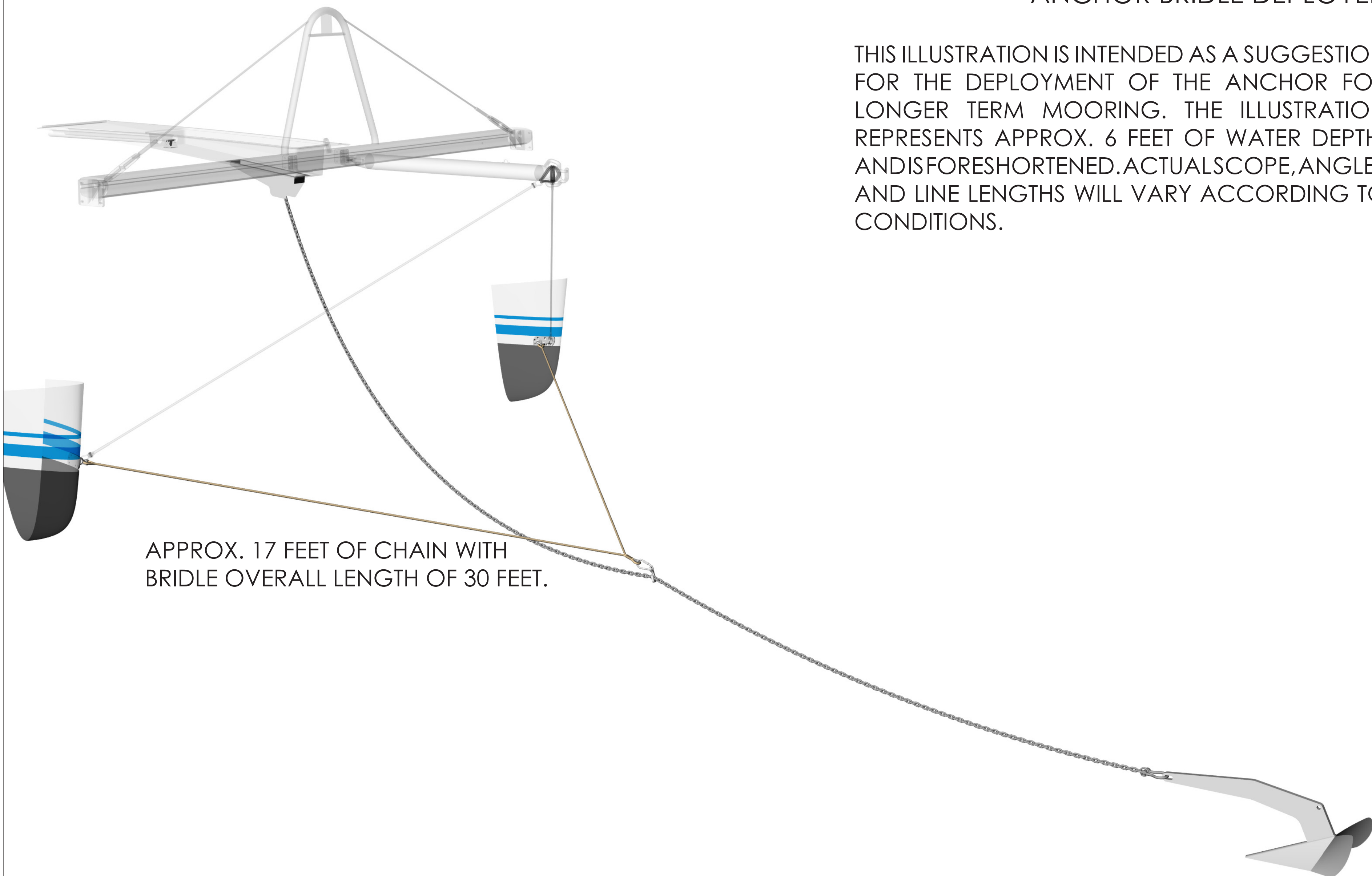


ANTARES 44
ANCHOR BRIDLE INSTRUCTION
SP-04-06

ISSUED JULY 14, 2009

ANCHOR BRIDLE DEPLOYED

THIS ILLUSTRATION IS INTENDED AS A SUGGESTION FOR THE DEPLOYMENT OF THE ANCHOR FOR LONGER TERM MOORING. THE ILLUSTRATION REPRESENTS APPROX. 6 FEET OF WATER DEPTH, AND IS FORESHORTENED. ACTUAL SCOPE, ANGLES AND LINE LENGTHS WILL VARY ACCORDING TO CONDITIONS.



APPROX. 17 FEET OF CHAIN WITH
BRIDLE OVERALL LENGTH OF 30 FEET.

ANTARES 44
ANCHOR BRIDLE INSTRUCTION
SP-04-06

ISSUED JULY 14, 2009

I = 43'
P = 47'
J = 14'
E = 17'
ISP SCREECHER = 48'
ISP SPINNAKER = 48'-6"

LOA 44' 6" SPRIT FOLDED
BEAM 21' 6"
MAST LT. 61' ABOVE WL
HULL CENTRES 16'
MEDIAN DRAFT 4'
VOYAGING DISPLACEMENT 26,000 LB.



THIS DRAWING IS INTENDED AS A STUDY PLAN ONLY. OPTIONAL EQUIPMENT MAY BE DEPICTED, PLEASE CALL TO CONFIRM YOUR VESSEL SPECIFICATIONS

Antares
YACHTS

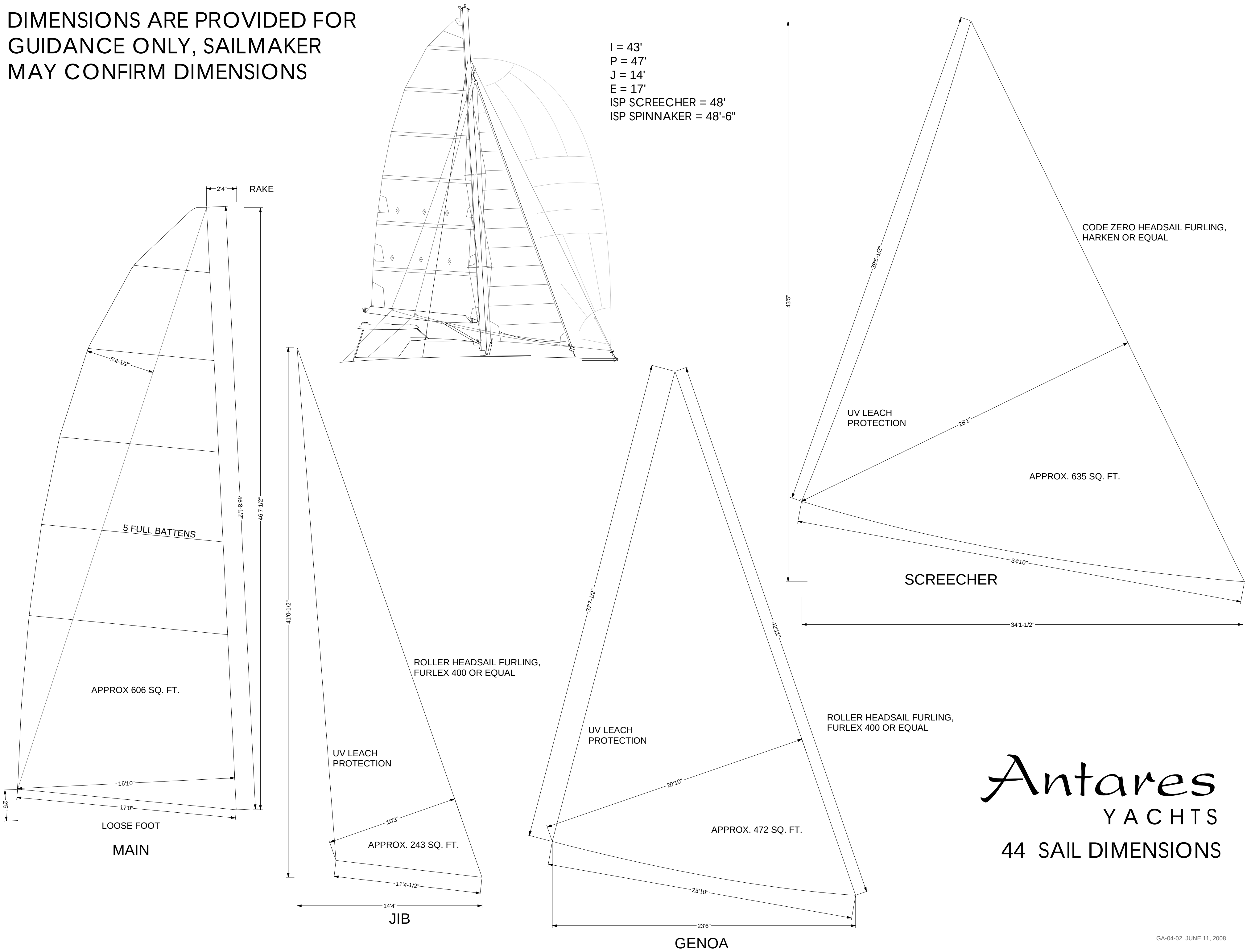
44 SAILPLAN

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GA-04-02 FEB. 5, 2008

DIMENSIONS ARE PROVIDED FOR GUIDANCE ONLY, SAILMAKER MAY CONFIRM DIMENSIONS

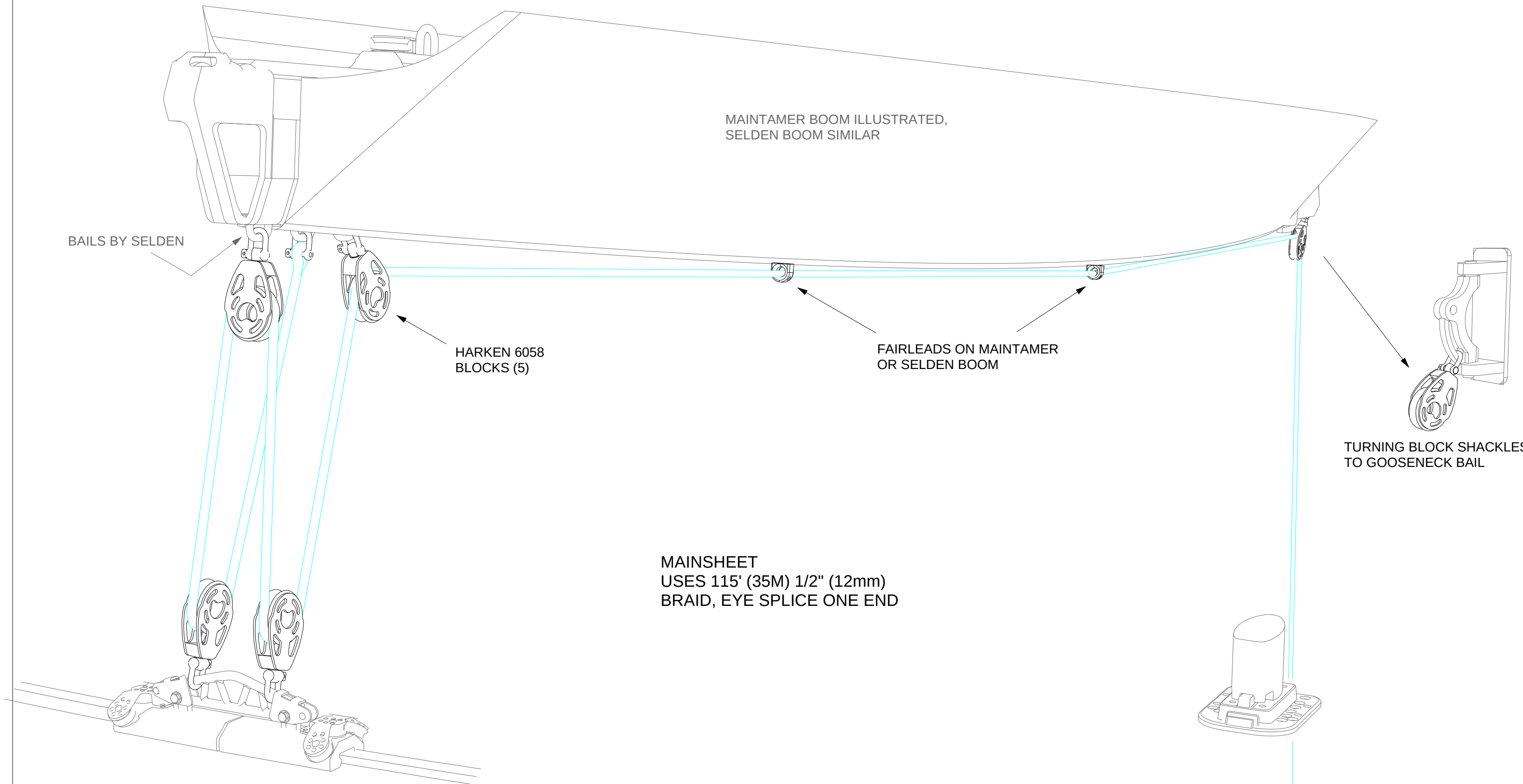
I = 43'
P = 47'
J = 14'
E = 17'
ISP SCREECHER = 48'
ISP SPINNAKER = 48'-6"

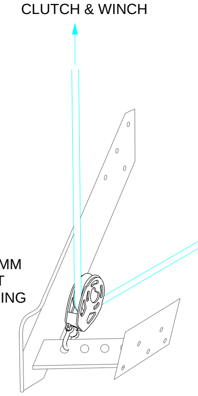


Antares YACHTS

44 SAIL DIMENSIONS

GA-04-02 JUNE 11, 2008





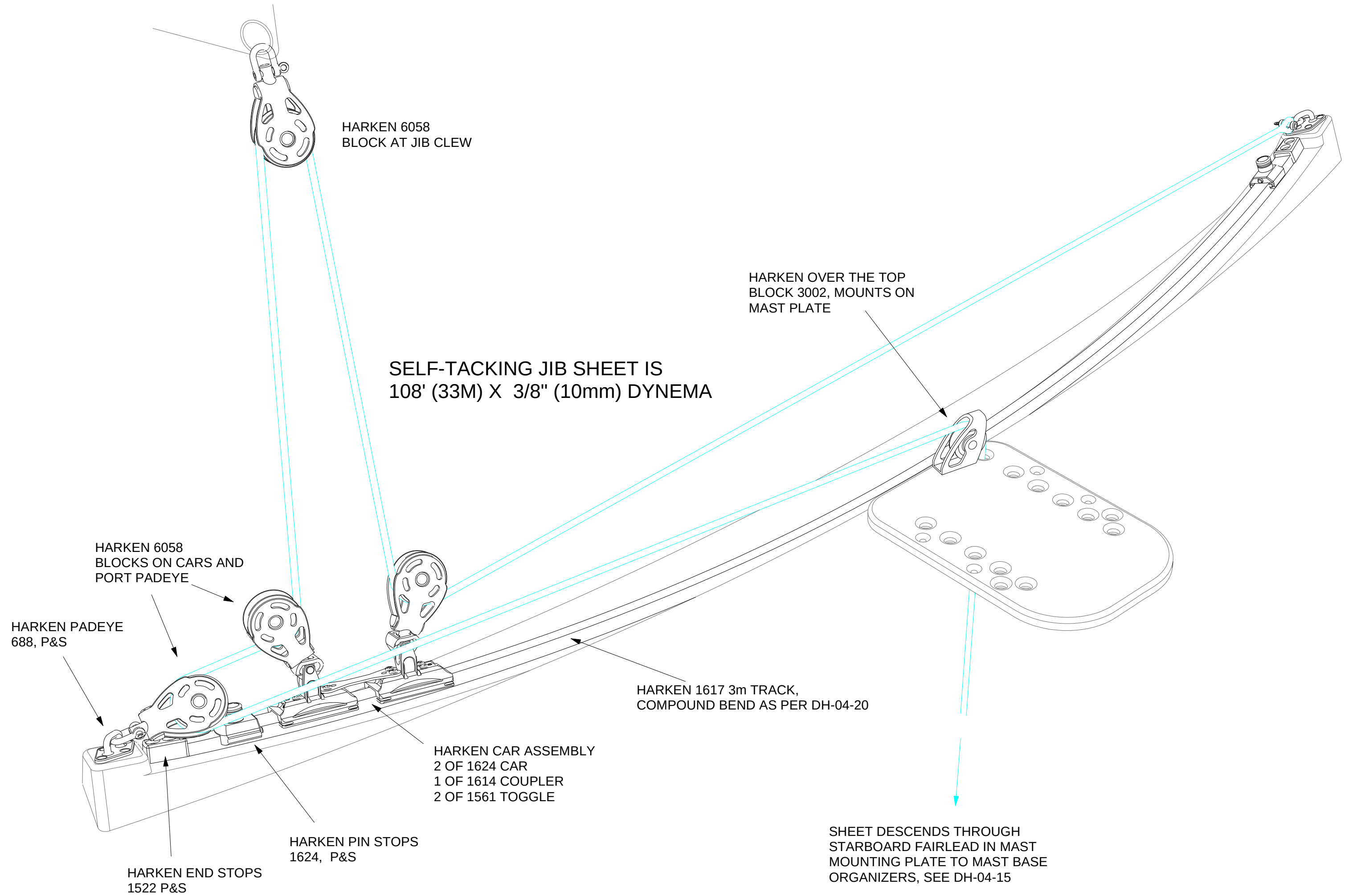
VIEW LOOKING FWD
UNDER SHEET WINCH PEDESTAL

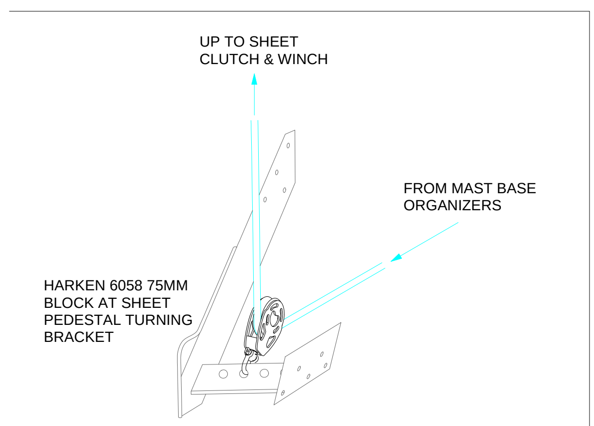
MAIN SHEET TACKLE

ANTARES 44 DECK HARDWARE
RUNNING RIGGING PLANS
SHEET 1 OF 12
DH-04-17

FIRST ISSUE NOV.6 2003
FIRST USED VESSEL 4408

T. C.



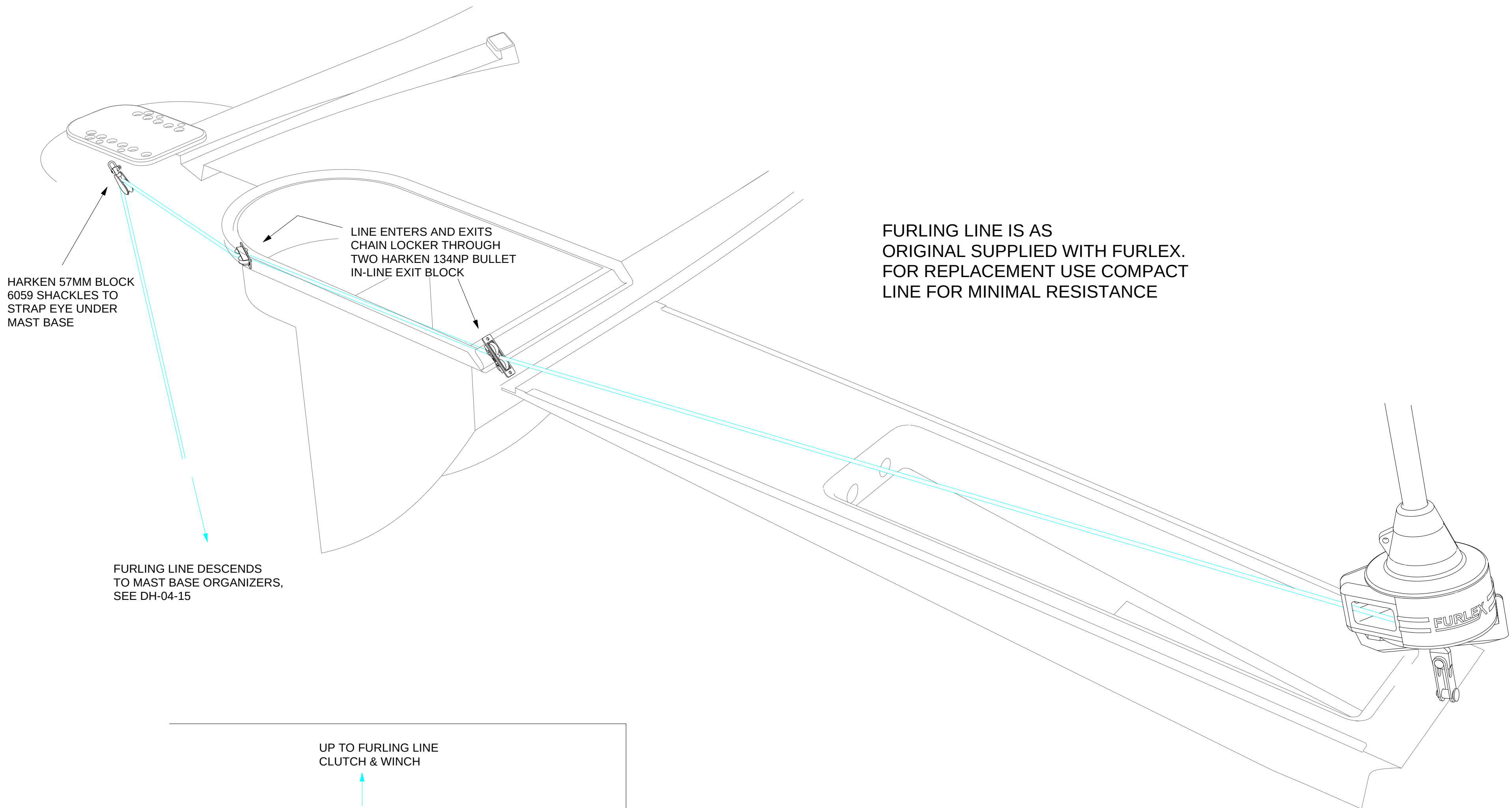


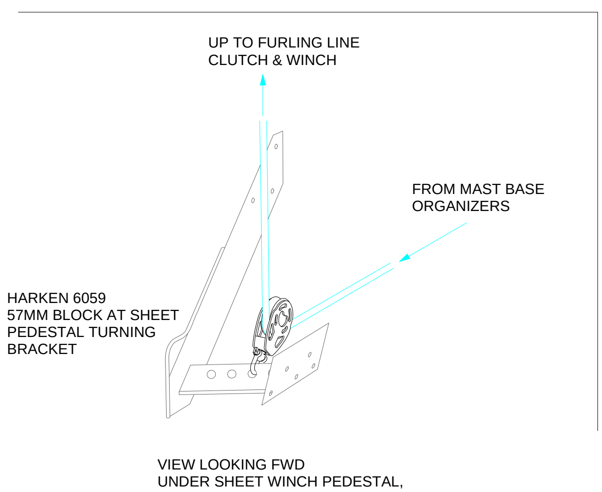
VIEW LOOKING FWD
UNDER SHEET WINCH PEDESTAL

SELF TACKING JIB SHEET TACKLE

ANTARES 44 DECK HARDWARE RUNNING RIGGING PLANS
SHEET 2 OF 12
DH-04-17

T. C.

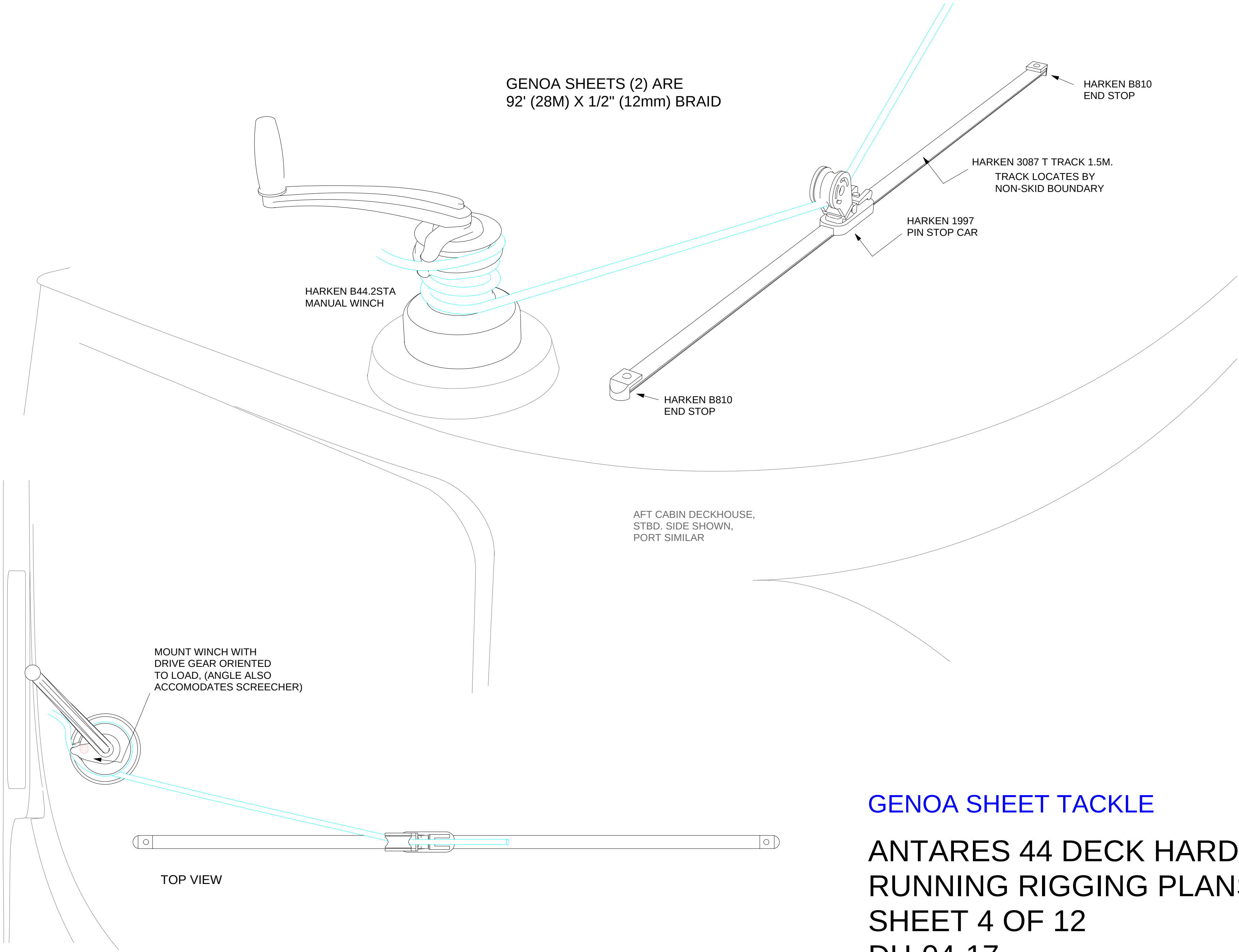




JIB / GENOA FURLING TACKLE

ANTARES 44 DECK HARDWARE
RUNNING RIGGING PLANS
SHEET 3 OF 12
DH-04-17

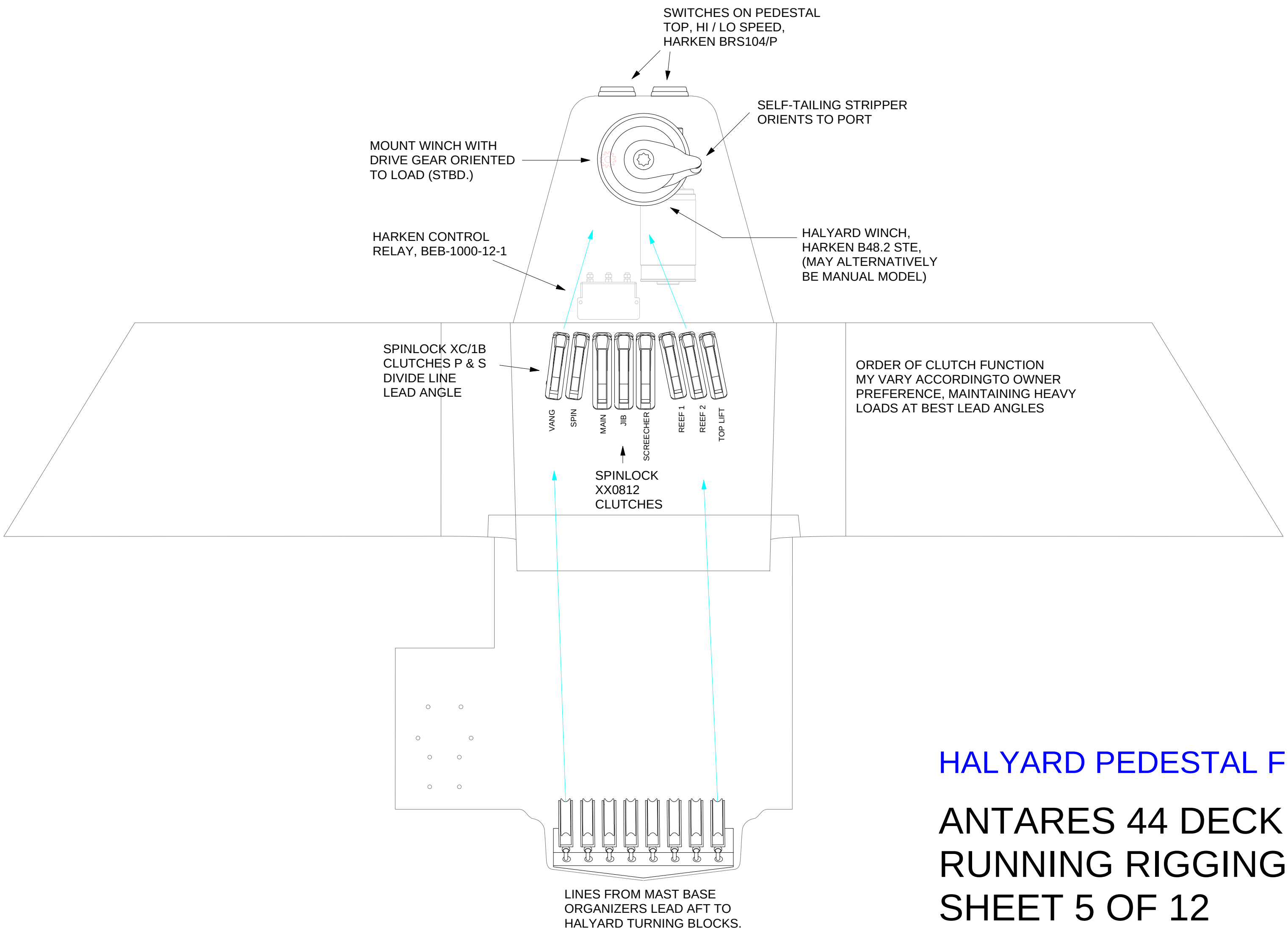
T. C.



GENOA SHEET TACKLE

ANTARES 44 DECK HARDWARE
RUNNING RIGGING PLANS
SHEET 4 OF 12
DH-04-17

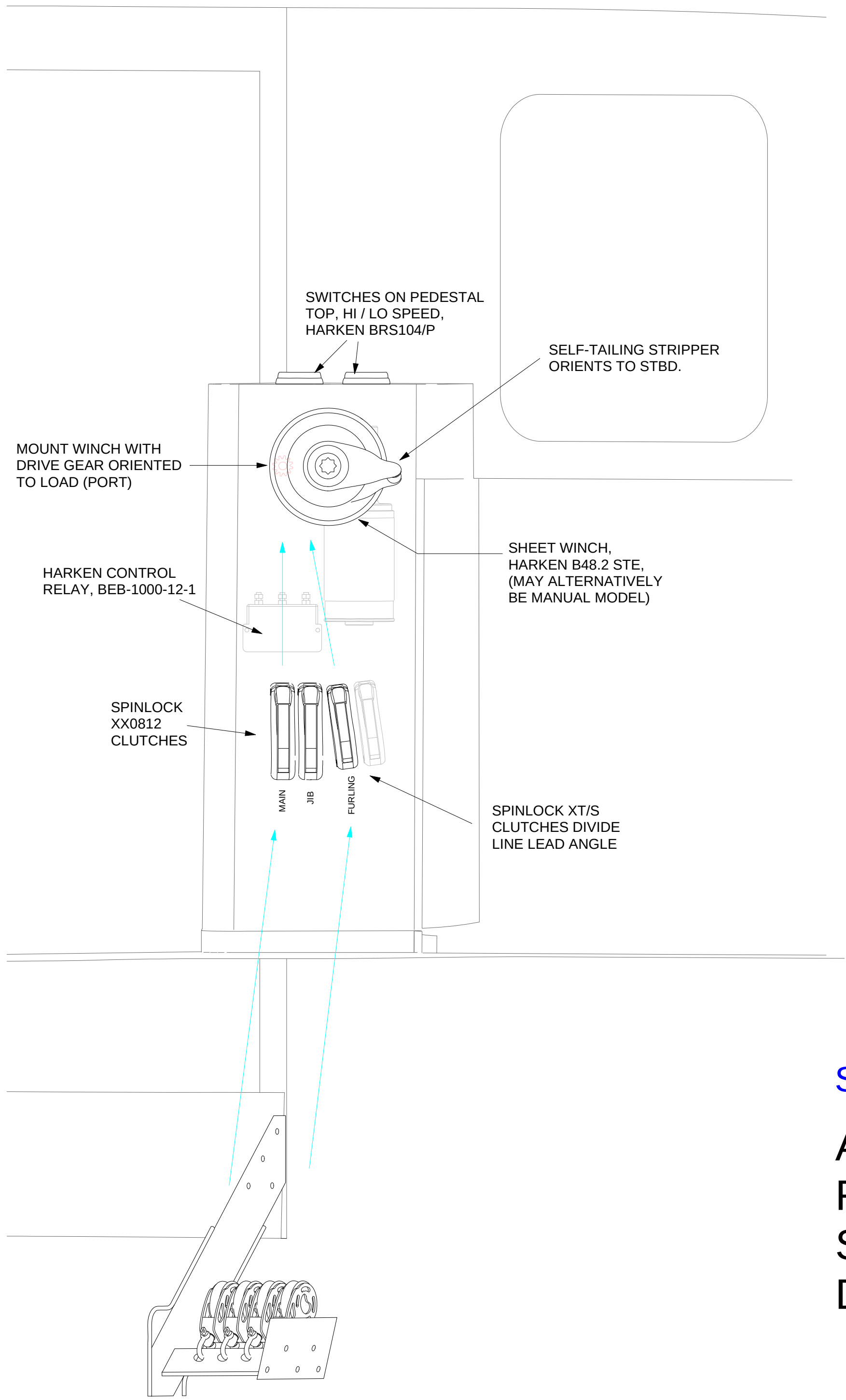
T. C.



HALYARD PEDESTAL FITOUT

ANTARES 44 DECK HARDWARE
RUNNING RIGGING PLANS
SHEET 5 OF 12
DH-04-17

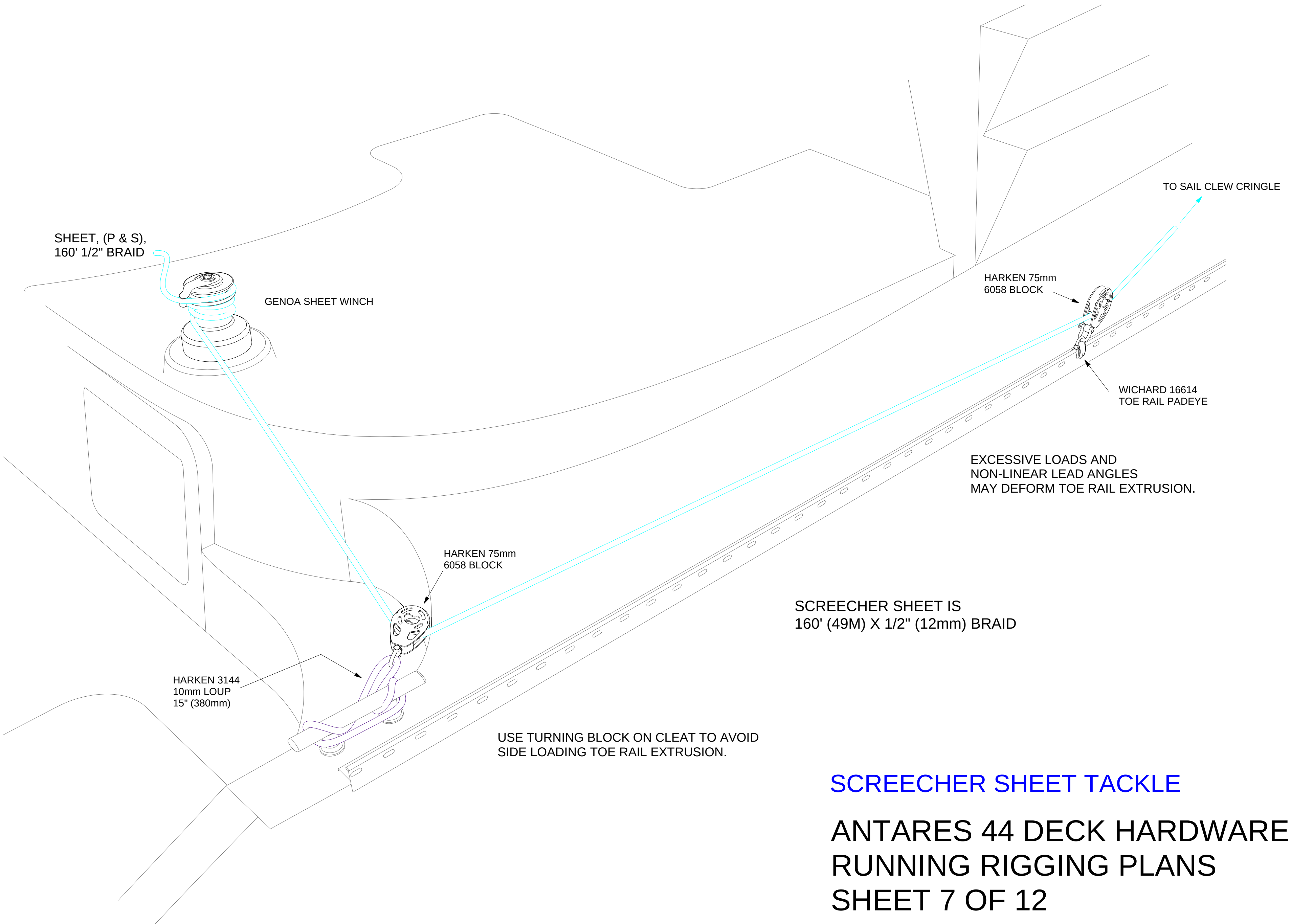
T. C.



SHEET PEDESTAL FITOUT

ANTARES 44 DECK HARDWARE
RUNNING RIGGING PLANS
SHEET 6 OF 12
DH-04-17

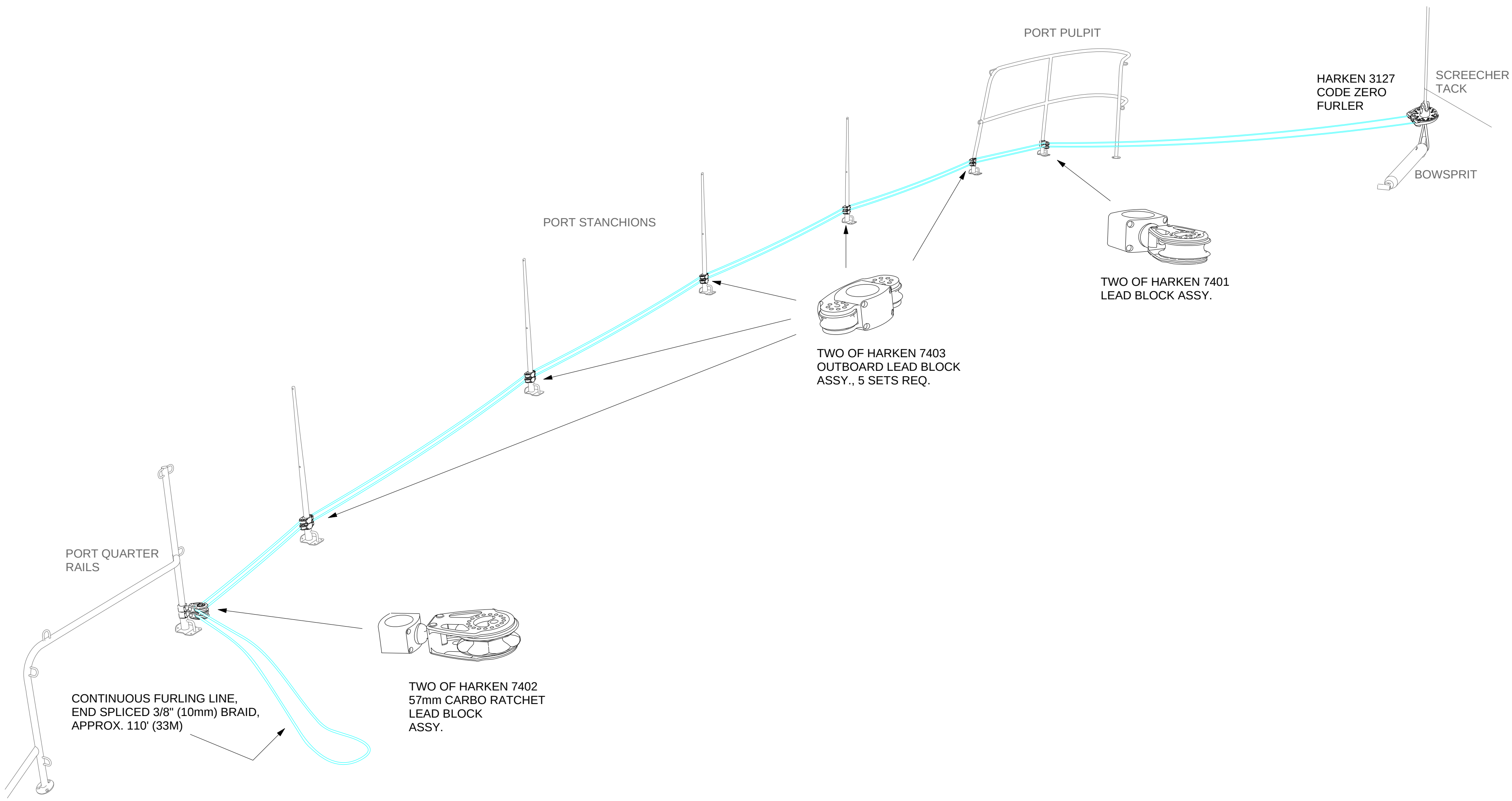
T. C.



SCREECHER SHEET TACKLE

ANTARES 44 DECK HARDWARE
RUNNING RIGGING PLANS
SHEET 7 OF 12
DH-04-17

T. C.

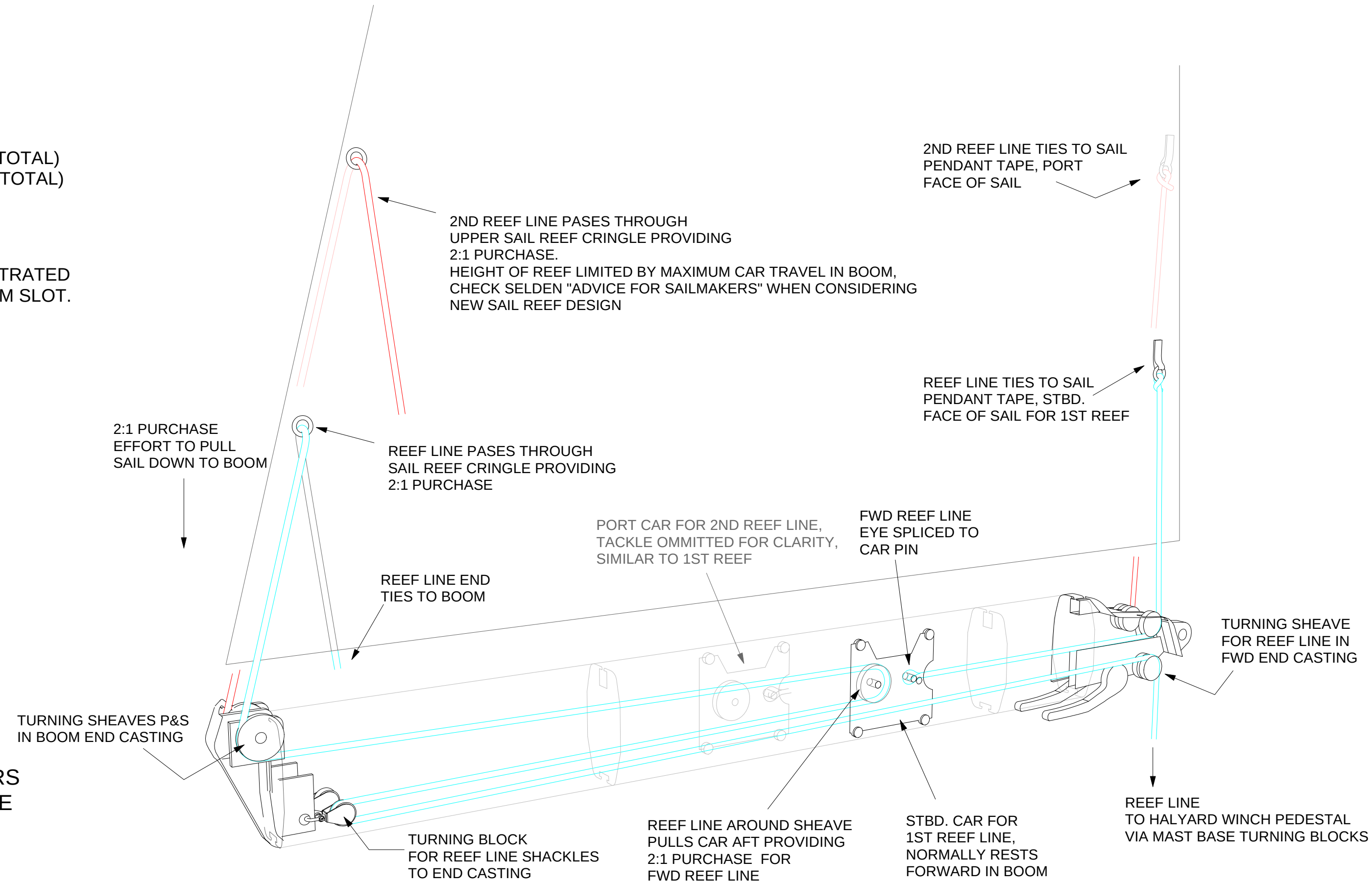


SCREECHER FURLING TACKLE

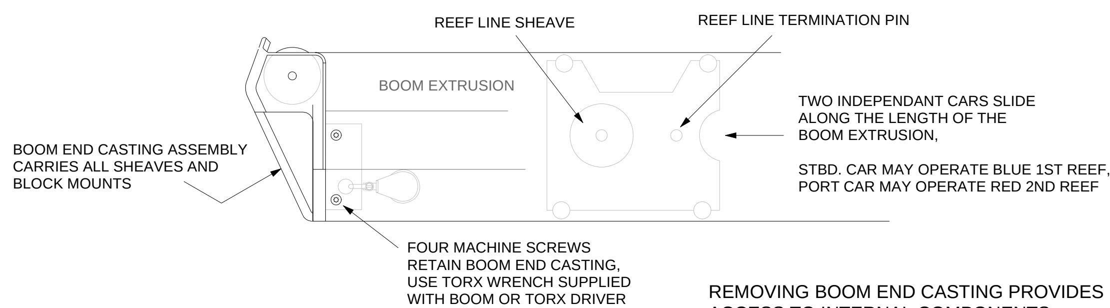
ANTARES 44 DECK HARDWARE
RUNNING RIGGING PLANS
SHEET 8 OF 12
DH-04-17

FROM SELDEN SPECIFICATIONS:
REEF LINES ARE 10mm BRAID,
BLUE MARKED FOR 1ST REEF- AFT 30M, FWD 6M- (36M TOTAL)
RED MARKED FOR 2ND REEF - AFT 38M, FWD 6M- (44M TOTAL)

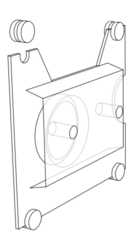
MAINTAMER USES STANDARD SELDEN BOOM AS ILLUSTRATED
BUT AFT REEF LINES TERMINATE AT BAILS IN TOP BOOM SLOT.



TO SERVICE;
REMOVE END CASTING AND WITHDRAW CARS
AND TACKLE. INSPECT FOR WEAR AND FREE
OPERATION OF ALL COMPONENTS



REMOVING BOOM END CASTING PROVIDES
ACCESS TO INTERNAL COMPONENTS



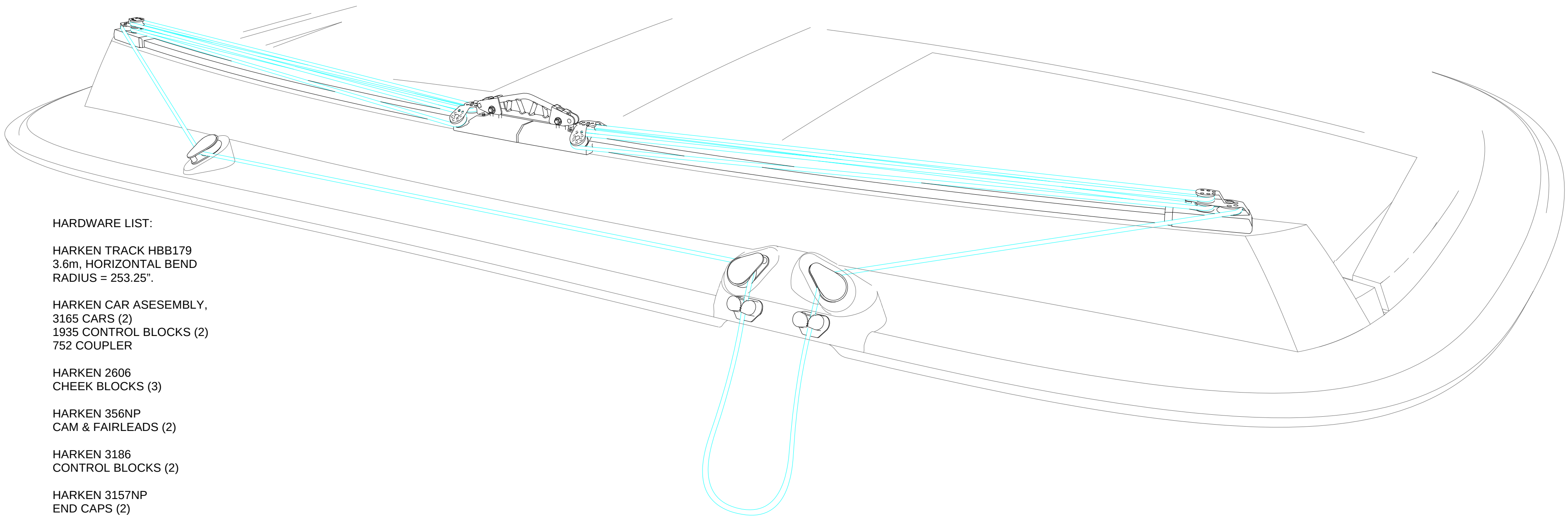
NOTE:
EARLIER PRODUCTION CARS HAVE FOUR LOOSE ROLLERS
AS ILLUSTRATED.
WATCH FOR ROLLERS WHEN REMOVING CAR FOR SERVICE.

LATER PRODUCTION CARS DO NOT USE THE ROLLERS AND
HAVE A DIFFERENT PROFILE, FUNCTION IS THE SAME

SINGLE LINE REEFING

ANTARES 44 DECK HARDWARE
RUNNING RIGGING PLANS
SHEET 9 OF 12
DH-04-17

T. C.



HARDWARE LIST:

HARKEN TRACK HBB179
3.6m, HORIZONTAL BEND
RADIUS = 253.25".

HARKEN CAR ASESEMBLY,
3165 CARS (2)
1935 CONTROL BLOCKS (2)
752 COUPLER

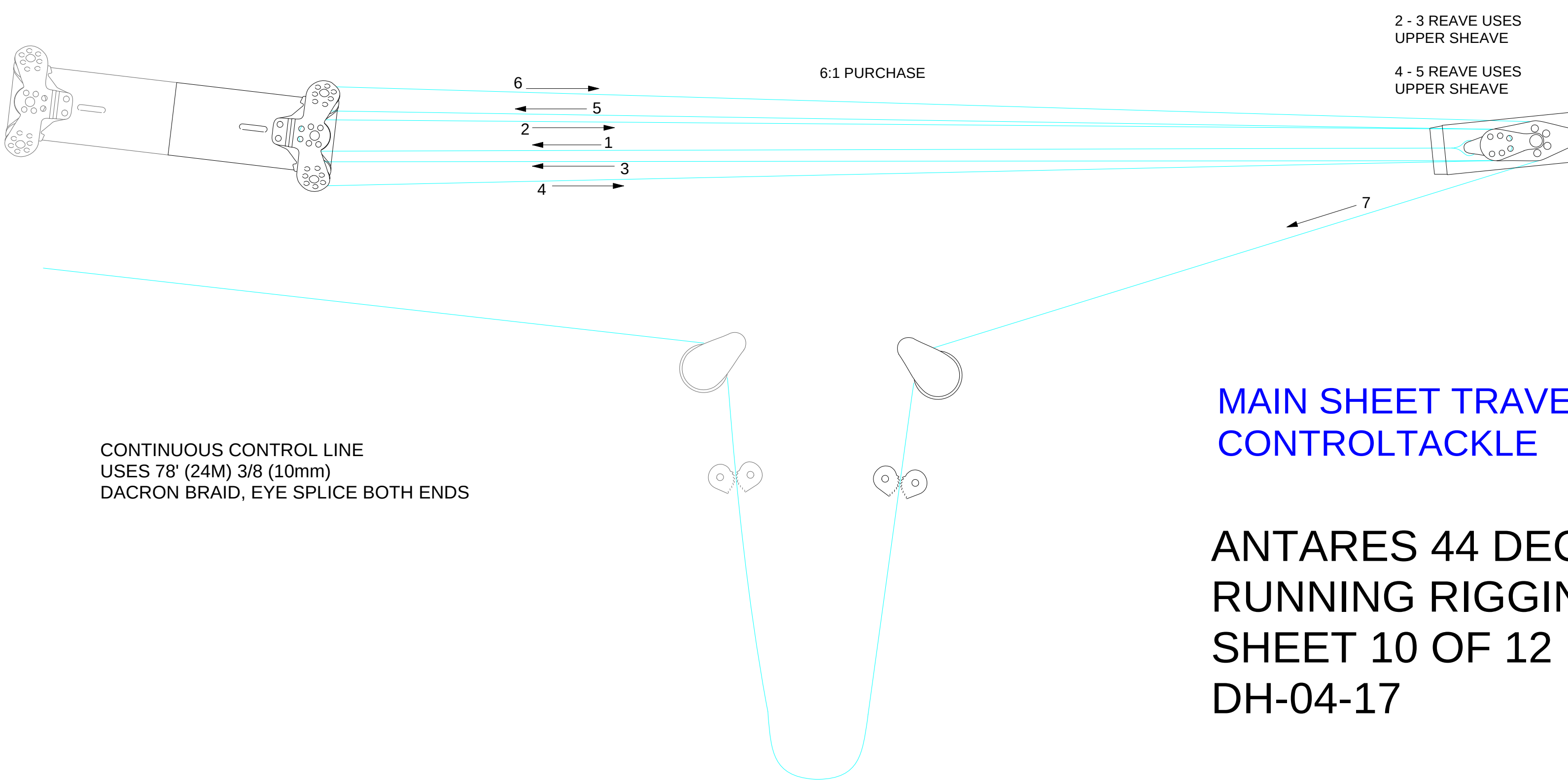
HARKEN 2606
CHEEK BLOCKS (3)

HARKEN 356NP
CAM & FAIRLEADS (2)

HARKEN 3186
CONTROL BLOCKS (2)

HARKEN 3157NP
END CAPS (2)

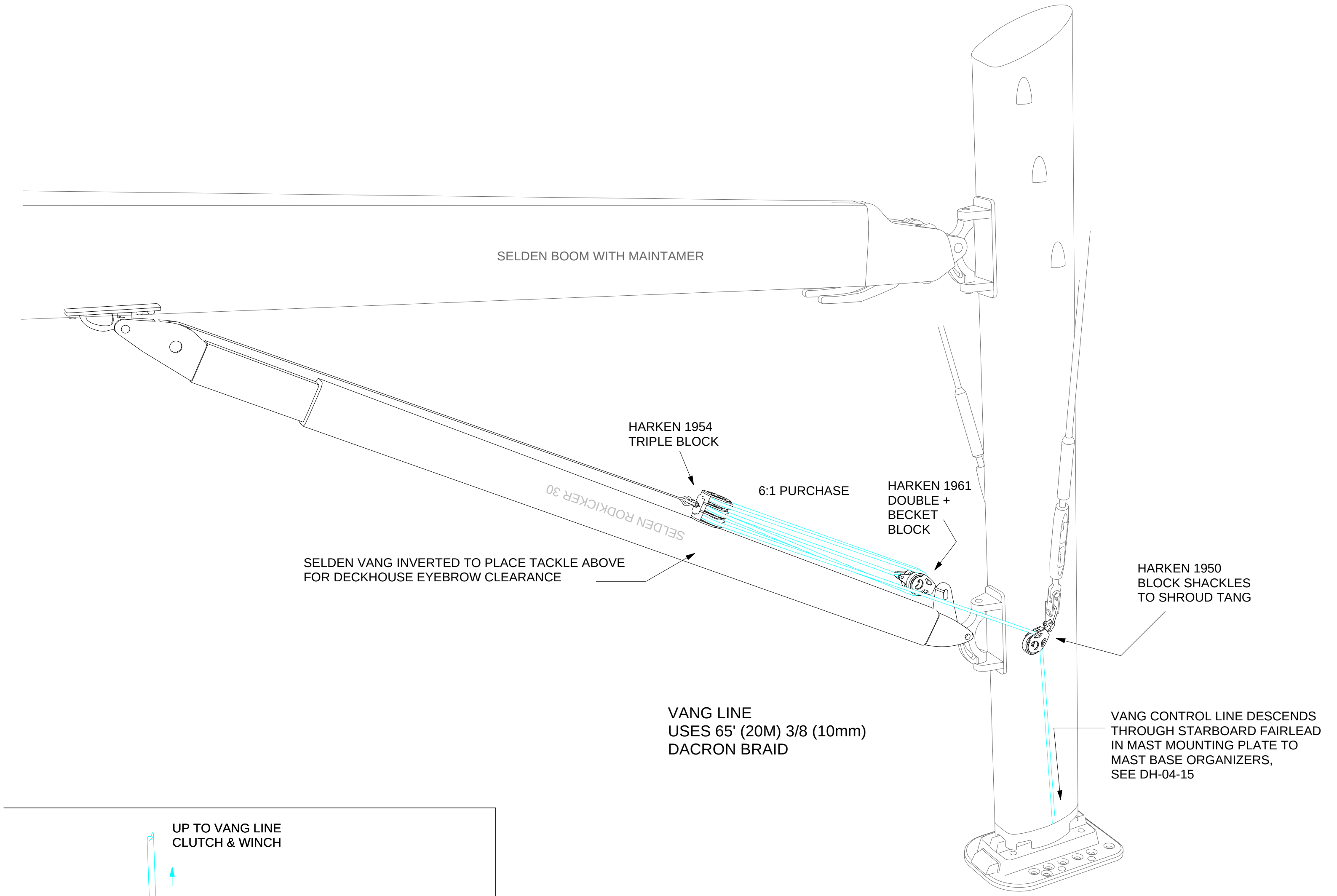
SEE ALSO DH-04-18 HARDTOP FITOUT

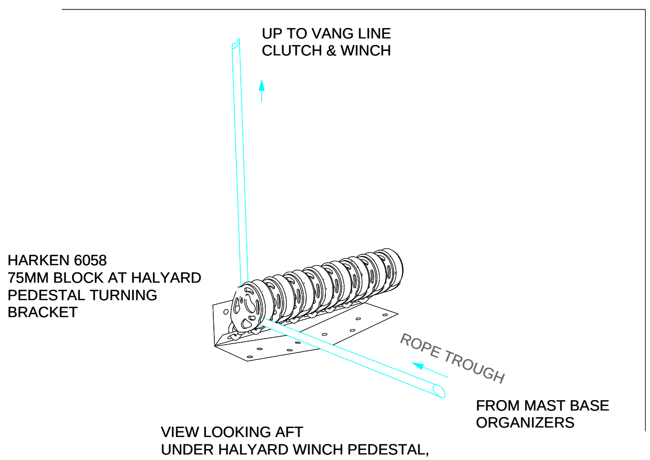


CONTINUOUS CONTROL LINE
USES 78' (24M) 3/8 (10mm)
DACRON BRAID, EYE SPLICE BOTH ENDS

MAIN SHEET TRAVELER CONTROLTACKLE

ANTARES 44 DECK HARDWARE RUNNING RIGGING PLANS
SHEET 10 OF 12
DH-04-17

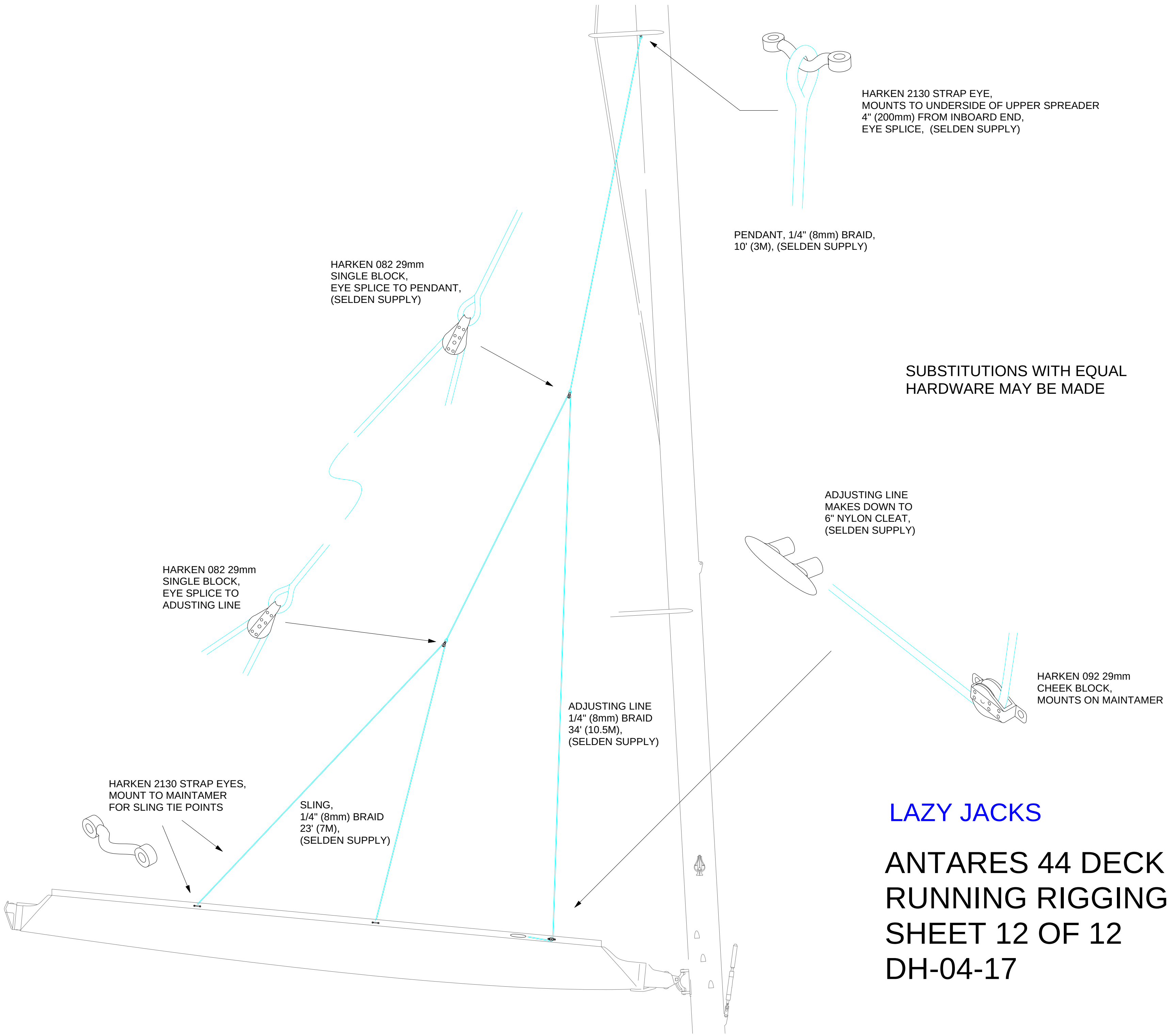




VANG TACKLE

ANTARES 44 DECK HARDWARE
RUNNING RIGGING PLANS
SHEET 11 OF 12
DH-04-17

T. C.



LAZY JACKS

ANTARES 44 DECK HARDWARE
RUNNING RIGGING PLANS
SHEET 12 OF 12
DH-04-17

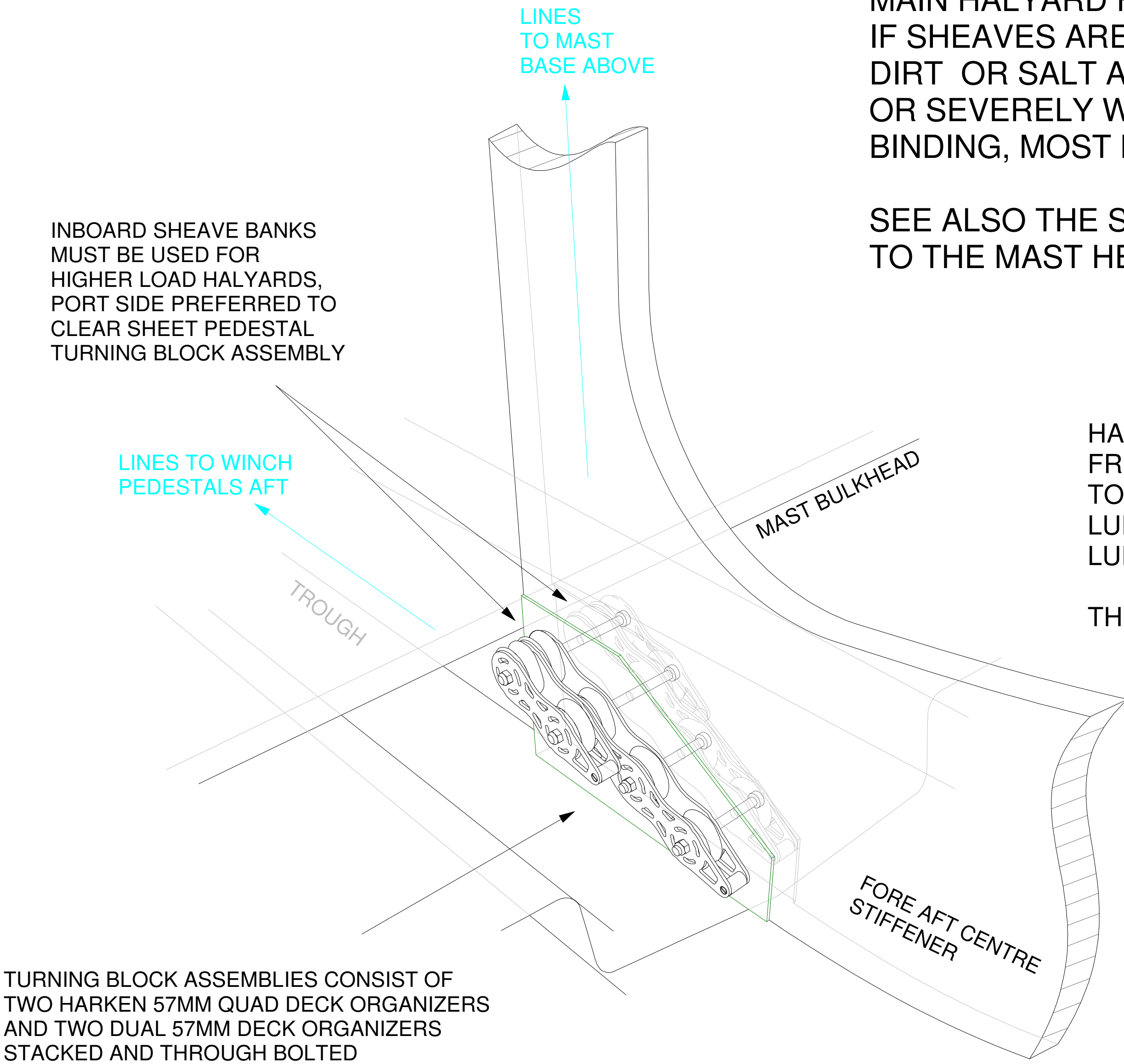
T. C.

MAIN HALYARD FALL RESISTANCE WILL BE EXPERIENCED IF SHEAVES ARE NOT FREE RUNNING AND TRUE. DIRT OR SALT ACCUMULATIONS WILL RESULT IN SEIZED OR SEVERELY WORN SHEAVES AND SIGNIFICANT HALYARD BINDING, MOST NOTICEABLE WHEN DROPPING THE SAIL.

SEE ALSO THE SELDÉN MANUAL FOR REGULAR SERVICE TO THE MAST HEADBOX SHEAVES

HARKEN RECOMMENDS THAT THE BLOCKS BE FREQUENTLY FLUSHED WITH FRESH WATER TO REMOVE SALT DEPOSITS AND DIRT. LUBRICATION WITH A NON-DIRT ATTRACTING LUBRICANT LIKE HARKEN McLUBE MAY BE APPLIED.

THIS IS A REGULAR MAINTENANCE ITEM!



MAST BASE BLOCK ASSEMBLY

LOCATED IN MAST BASE COMPARTMENT,
VIEW IS LOOKING AFT AND INBOARD

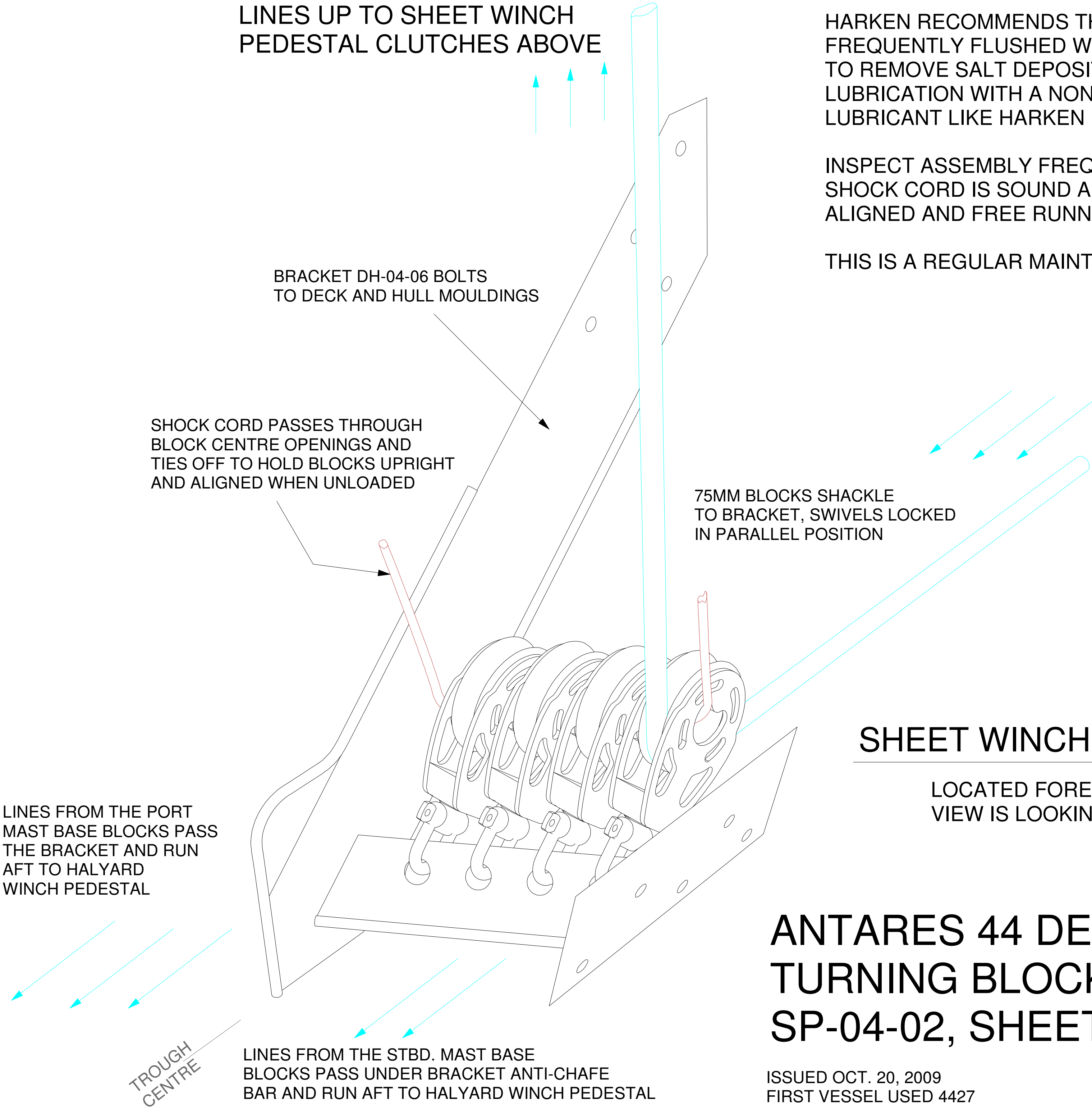
ANTARES 44 DECK HARDWARE
TURNING BLOCK MAINTENANCE
SP-04-02, SHEET 1 of 3

ISSUED OCT. 20, 2009 TC
FIRST VESSEL USED 4427

HARKEN RECOMMENDS THAT THE BLOCKS BE
FREQUENTLY FLUSHED WITH FRESH WATER
TO REMOVE SALT DEPOSITS AND DIRT.
LUBRICATION WITH A NON-DIRT ATTRACTING
LUBRICANT LIKE HARKEN McLUBE MAY BE APPLIED.

INSPECT ASSEMBLY FREQUENTLY TO ENSURE
SHOCK CORD IS SOUND AND ALL SHEAVES ARE
ALIGNED AND FREE RUNNING

THIS IS A REGULAR MAINTENANCE ITEM!



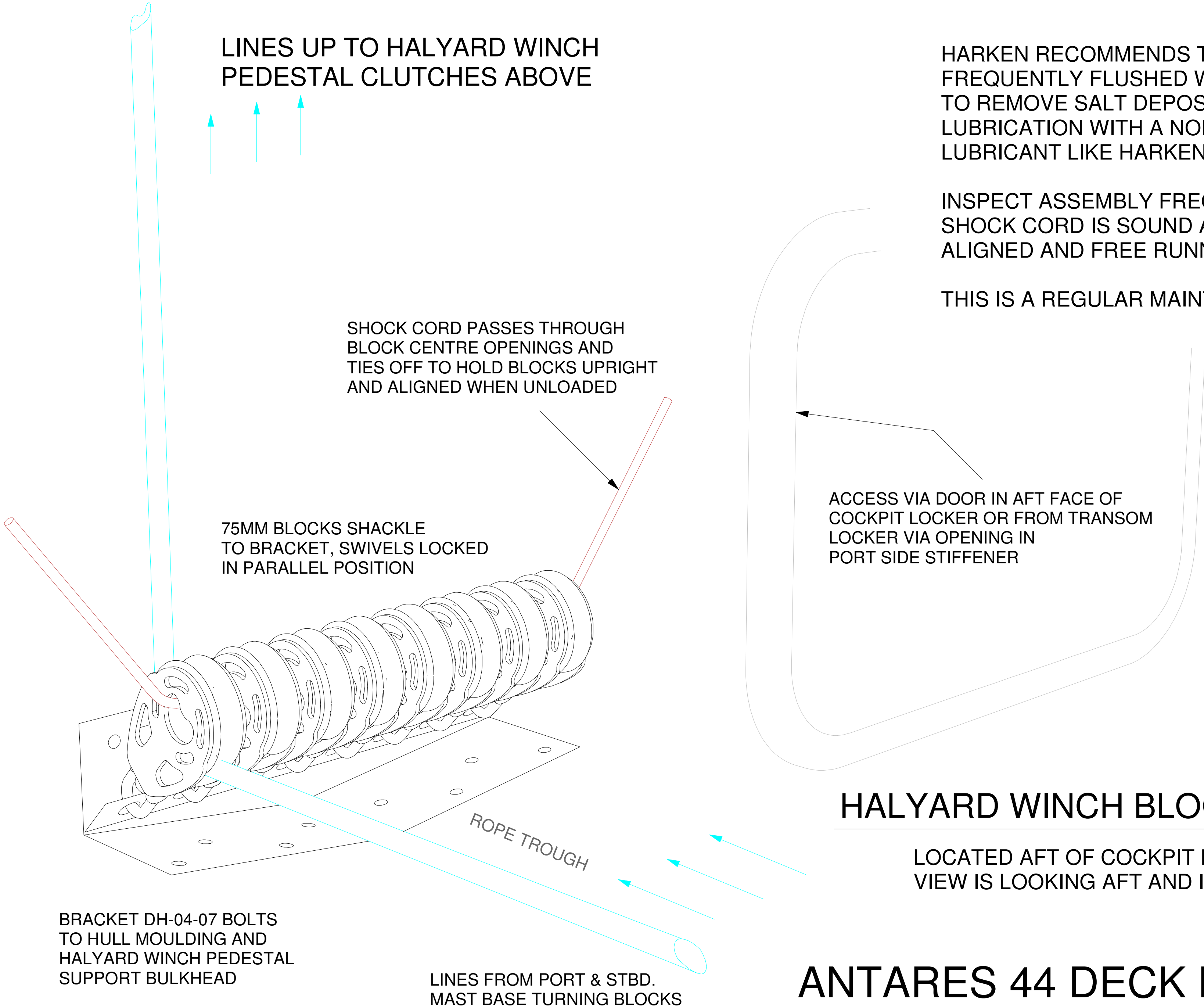
SHEET WINCH BLOCK ASSEMBLY

LOCATED FOREWARD IN COCKPIT LOCKER,
VIEW IS LOOKING FORWARD AND INBOARD

ANTARES 44 DECK HARDWARE
TURNING BLOCK MAINTENANCE
SP-04-02, SHEET 2 of 3

ISSUED OCT. 20, 2009
FIRST VESSEL USED 4427

TC



HARKEN RECOMMENDS THAT THE BLOCKS BE FREQUENTLY FLUSHED WITH FRESH WATER TO REMOVE SALT DEPOSITS AND DIRT. LUBRICATION WITH A NON-DIRT ATTRACTING LUBRICANT LIKE HARKEN McLUBE MAY BE APPLIED.

INSPECT ASSEMBLY FREQUENTLY TO ENSURE SHOCK CORD IS SOUND AND ALL SHEAVES ARE ALIGNED AND FREE RUNNING

THIS IS A REGULAR MAINTENANCE ITEM!

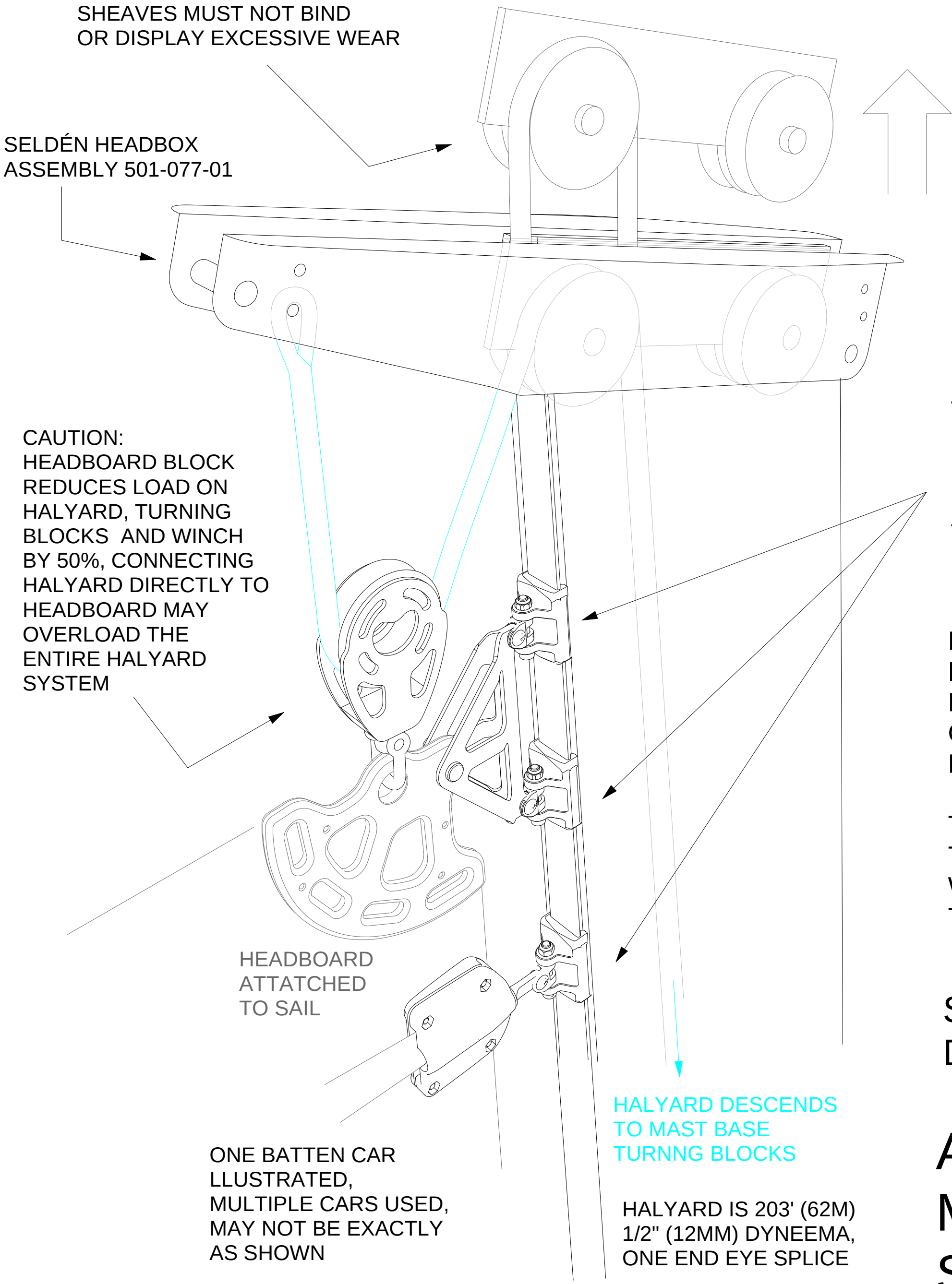
HALYARD WINCH BLOCK ASSEMBLY

LOCATED AFT OF COCKPIT LOCKER,
VIEW IS LOOKING AFT AND INBOARD

ANTARES 44 DECK HARDWARE TURNING BLOCK MAINTENANCE SP-04-02, SHEET 3 of 3

ISSUED OCT. 20, 2009
FIRST VESSEL USED 4427

TC



SEE THE SELDÉN MANUAL FOR REGULAR SERVICE TO THE MAST HEADBOX SHEAVES WHICH CAN BE SERVICED WITHOUT LOWERING SPAR OR UNREAVING HALYARDS BY LIFTING OUT THE DIVIDER PLATE AND SHEAVE ASSEMBLIES

ADDITIONAL FITTINGS FOR ANTENNA AND LIGHT MOUNTS MAY NEED TO BE DISCONNECTED FOR ACCESS, ASSEMBLY MAY NOT BE EXACTLY AS ILLUSTRATED

HARKEN RECOMMENDS THAT BLOCKS AND CARS BE FREQUENTLY FLUSHED WITH FRESH WATER TO REMOVE SALT DEPOSITS AND DIRT. LUBRICATION WITH A NON-DIRT ATTRACTING LUBRICANT LIKE HARKEN McLUBE MAY BE APPLIED.

THIS IS A REGULAR MAINTENANCE ITEM!

MAIN HALYARD FALL RESISTANCE WILL BE EXPERIENCED IF SHEAVES AND CARS ARE NOT FREE RUNNING AND TRUE. DIRT OR SALT ACCUMULATIONS WILL RESULT IN SEIZED OR SEVERELY WORN SHEAVES AND SIGNIFICANT HALYARD BINDING, MOST NOTICEABLE WHEN DROPPING THE SAIL.

THE WINCH IS CAPABLE OF GENERATING SUFFICIENT FORCE TO OVERCOME UNNATURAL RESISTANCE AND CONTINUED USE WITH BINDING COMPONENTS MAY INADVERTENTLY DAMAGE THE HALYARD TACKLE.

SEE ALSO TURNING BLOCK MAINTENANCE, DRAWING SP-04-02, THREE SHEETS

ANTARES 44 DECK HARDWARE MAIN HALYARD MAINTENANCE SP-04-07

ISSUED OCT. 20, 2009
FIRST VESSEL USED 4427

TC

MAJOR EQUIPMENT, DATA AND CONTACTS

MANUFACTURER	EQUIPMENT	MODEL NO.	SERIAL NO.	CONTACT

MAINTENENACE & REPAIR RECORD

DATE	ENGINE HOURS		WORK PERFORMED	TECHNICIAN
	PORT	STDB		

CE & ABYC LABEL REQUIREMENTS FOR ANTARES MODEL 44i

DETAILS	LOCATION	NUMBER REQUIRED
Builders plate MAX PERSONS, MAX LOAD, CE DESIGN CATEGORY AND INSPECTOR'S # (CE0609)	Main Helm **NOTE:** CE Boats only	1
Engine Compartment Warning WARNING DANGER OF ROTATING EQUIPMENT	On each removable engine access location **NOTE:** Labels supplied by engine manufacturer	2
Leaking Fuel Warning LEAKING FUEL IS A FIRE AND EXPLOSION HAZARD AVOID SERIOUS INJURY OR DEATH FROM FIRE OR EXPLOSION INSPECT FUEL SYSTEM FOR LEAKS AT LEAST ONCE A YEAR	On inside of each motor locker cover	2
Generator Compartment Warning WARNING DANGER OF ROTATING EQUIPMENT	On removable component for generator compartment access **NOTE:** Label supplied by generator manufacturer	1
Generator Warning – ABYC A-27, 27.16.3 ISO Symbols for Electrical Hazard, Read Owner's Manual WARNING RE INSTALLATION, MAINTENANCE AND REPAIR IN CONFORMANCE WITH THE MANUFACTURER'S INSTRUCTIONS	On removable component for generator compartment access	1
AC Electrical Panel ISO SYMBOLS FOR FIRE HAZARD, WARNING, ELECTRIC SHOCK, READ OWNERS MANUAL	On panel covering AC panel	1
Inverter Warning WARNING RE DISCONNECTING INVERTER'S AC & DC INPUTS BEFORE SERVICING ELECTRICAL SYSTEMS	At Electrical Panel **NOTE:** Label supplied from inverter manufacturer	1
Pathmaker Warning NOT RECOMMENDED FOR USE IN EMERGENCY ENGINE STARTS	On panel above Pathmaker	1
Shore Power Label ISO SYMBOLS – ELECTRCAL SHOCK, READ OWNERS MANUAL	On shore power cap	2
Fire Extinguisher Location Label ISO SYMBOLS – READ OWNERS MANUAL, WARNING, FIRE EXTINGUISHER	In each aft cabin, at helm, at Galley. When installed, the fire extinguisher will cover this label	4
Fire Extinguisher Identifier Arrows YELLOW ARROW WITH RED BORDER WITH ISO FIRE EXTINGUISHER AND FIRE BLANKET SYMBOLS	On cabinets containing fire extinguishers	4

Not for Gasoline Storage	6 on aft deck lockers, 4 on forward deck lockers	10
Fire Port Warning WARDNING: DO NOT OPEN IN CASE OF FIRE, SHUT DOWN ENGINES, GENERATOR SETS AND BLOWERS, IMMEDIATELY DISCHARGE ENTIRE CONTENTS OF GASEOUS PORTABLE FIRE EXTINGUISHER THROUGH THE FIRE PORT	Engine compartments, generator compartments	3
LPG Warning – ABYC – A1 sec 1.11, A3 sec 3.10.4	LPG Cylinders Storage	1
LPG Test for System Leakage Instruction – ABYC – A1.5.1	LPG Cylinders Storage **NOTE:** Supplied by stove manufacturer	1
Warning – open flame cooking appliances	At stove	1
Emergency Escape	At stateroom hatches/capsize hatches	5
Capsize Warning Label ISO SYMBOL – WARNING, CAPSICE CATAMARAN, READ OWNERS MANUAL	At helm	1
Fire Extinguisher Ports Located Below Floor Boards	On wall near the fire port	2
Engine Warning Label – Flammable (filler port)	At deck fill plates **NOTE:** Supplied by engine manufacturer	2
Oil Discharge Placard	Engine	1
Pollution Prevention Placard	Garbage can	1
Sling Decals	On side of hull	4
LG100 Fuel/Air Separator	Near fuel ports **NOTE:** Supplied by Racor	2
Bilge Pump TO POWER BILGE PUMP BREAKER BATTERY SWITHC & PANEL MAIN BREAKER MUST BE ON	At helm	1
Engine Placard	At helm **NOTE:** Supplied by engine manufacturer	1
Propeller Proximity Warning ABYC – H41.10.1.a	At helm	1
Propeller Proximity Warning ABYC – H41.10.1.b	At transom ladder	1